TECHNOLOGY DEPT.

Gas Journal

Vol. 272. 104th Year. LONDON, NOVEMBER 26, 1952. No. 4669. Price 1/3
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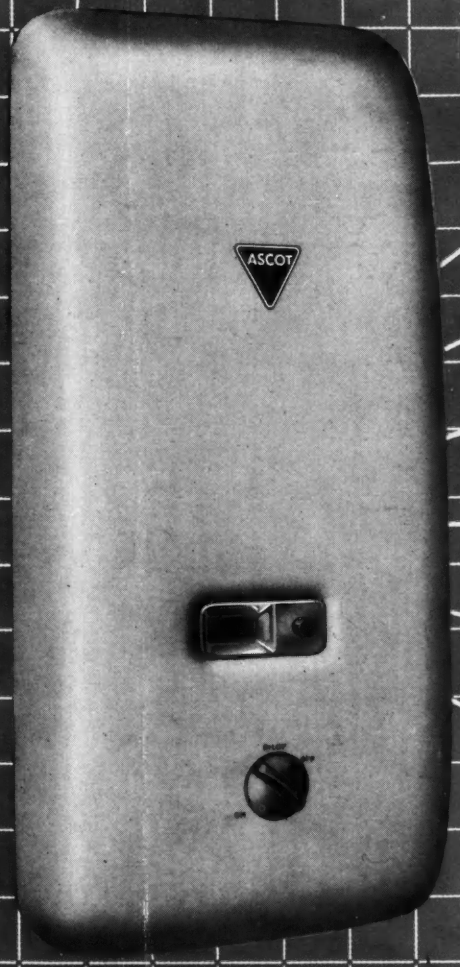

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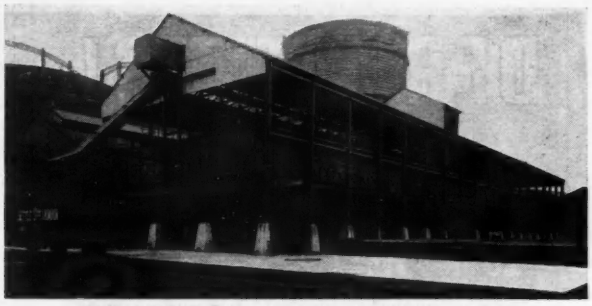

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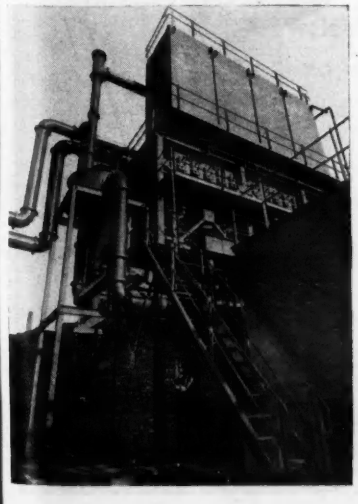

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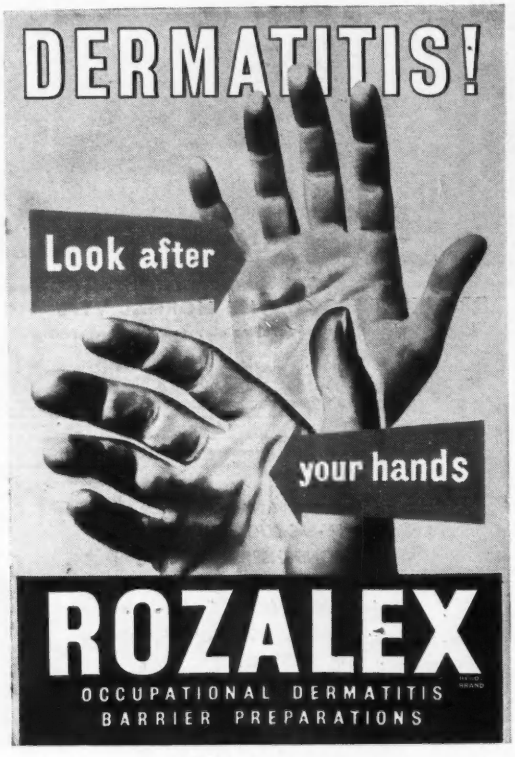

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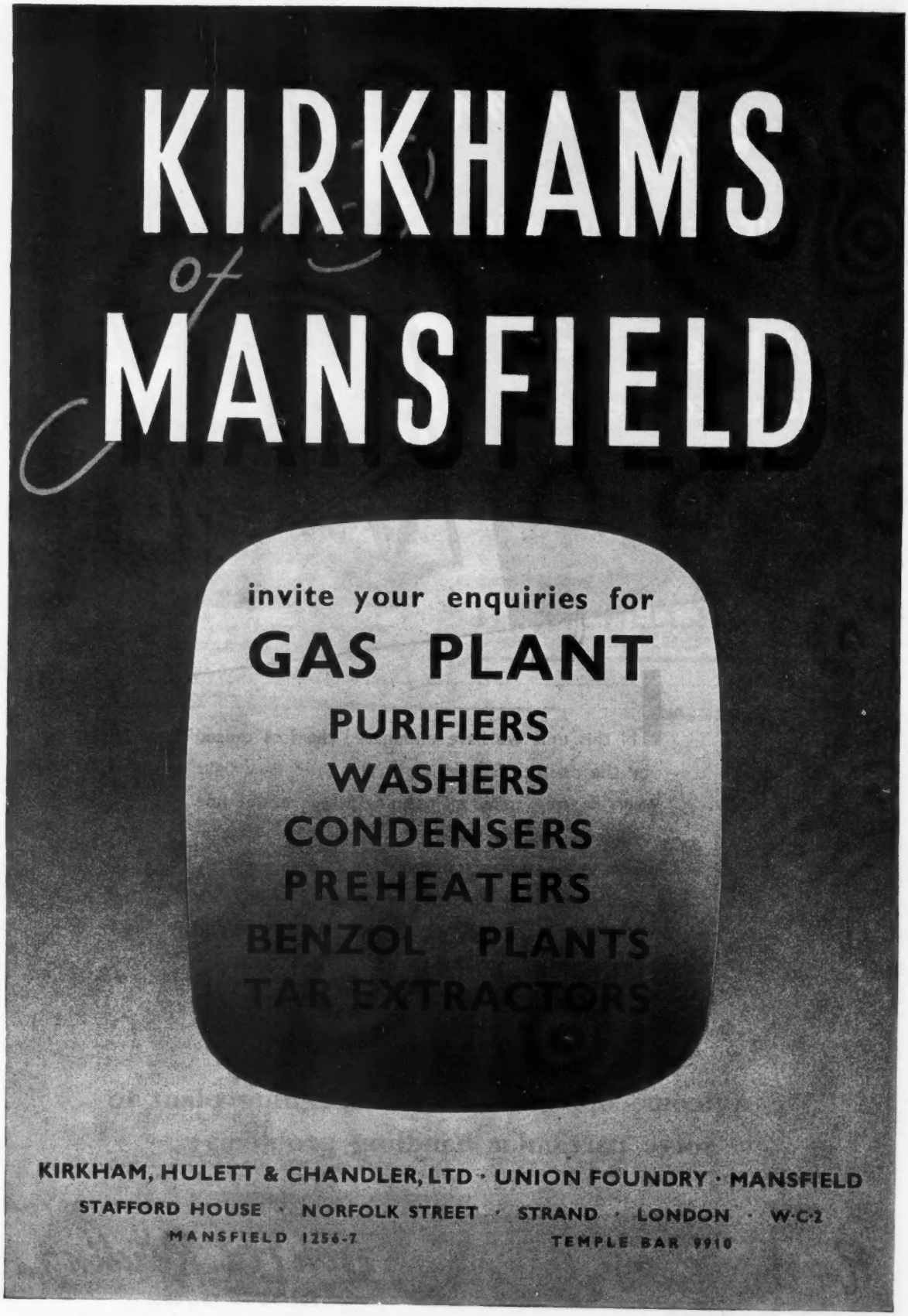
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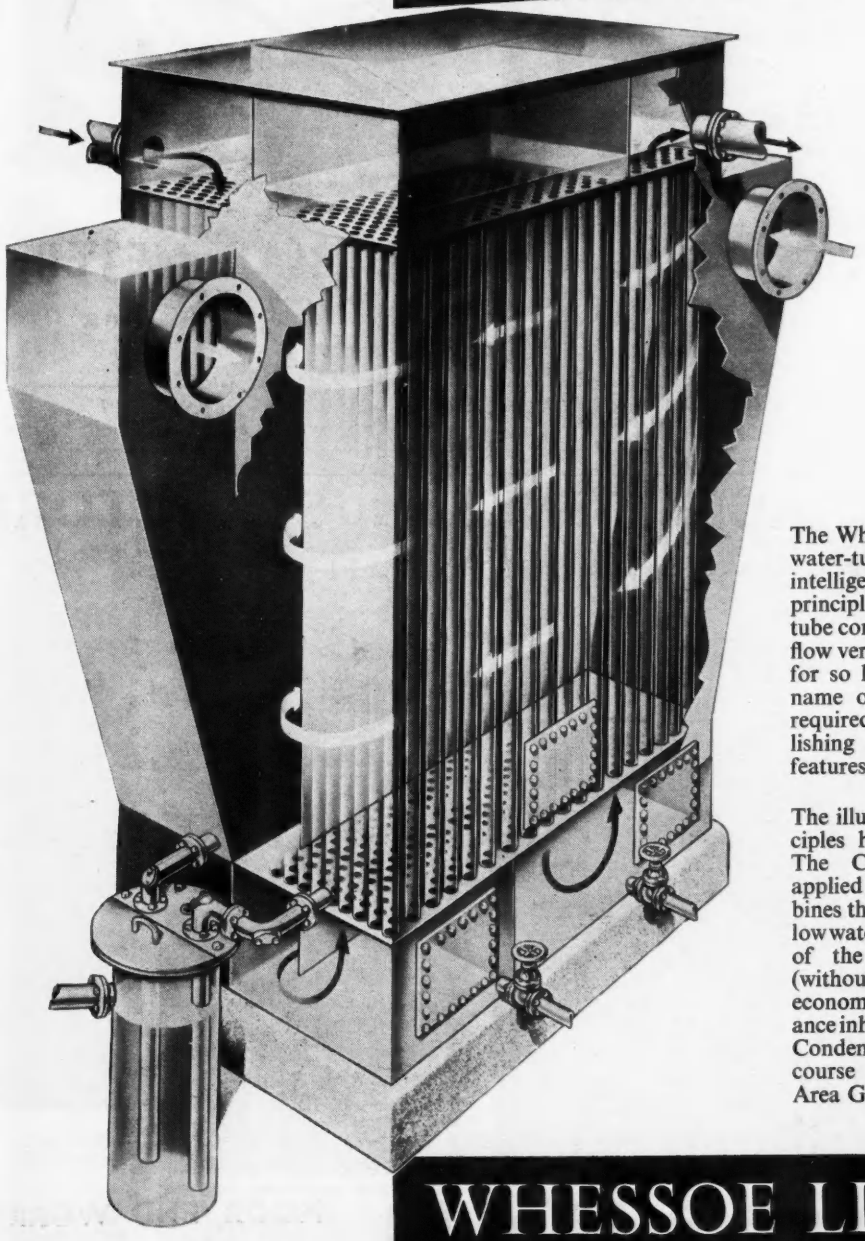

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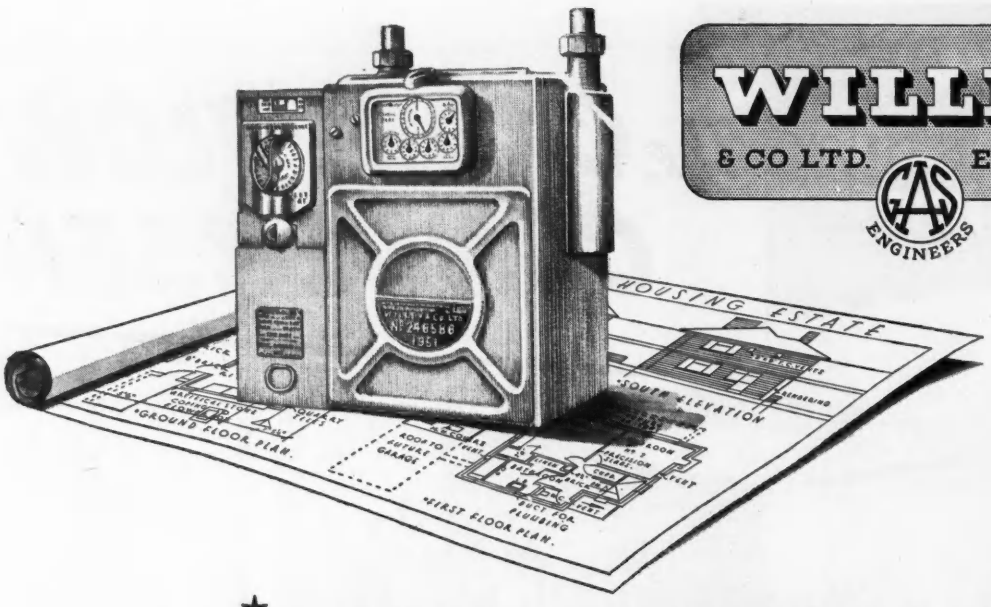

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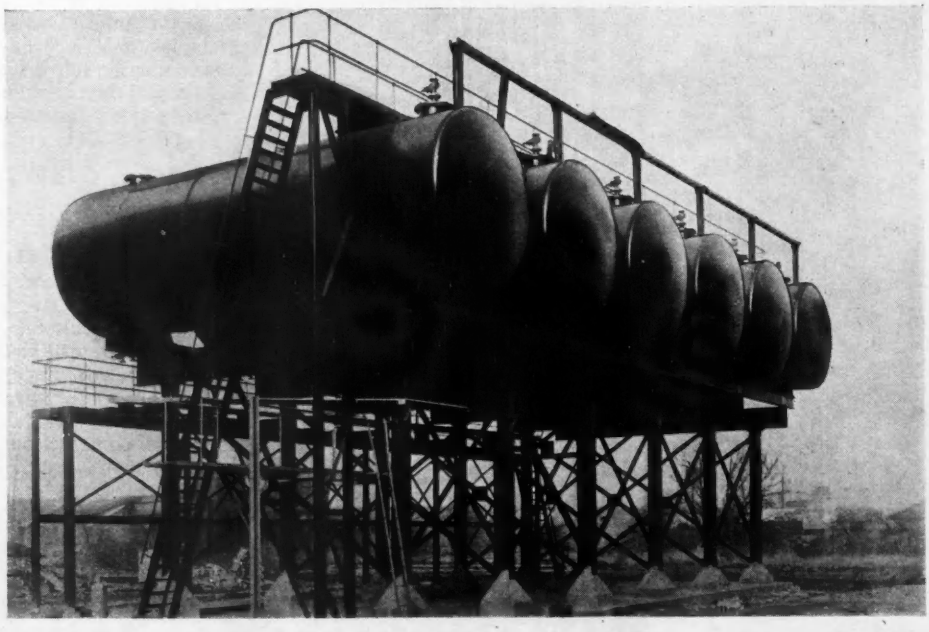

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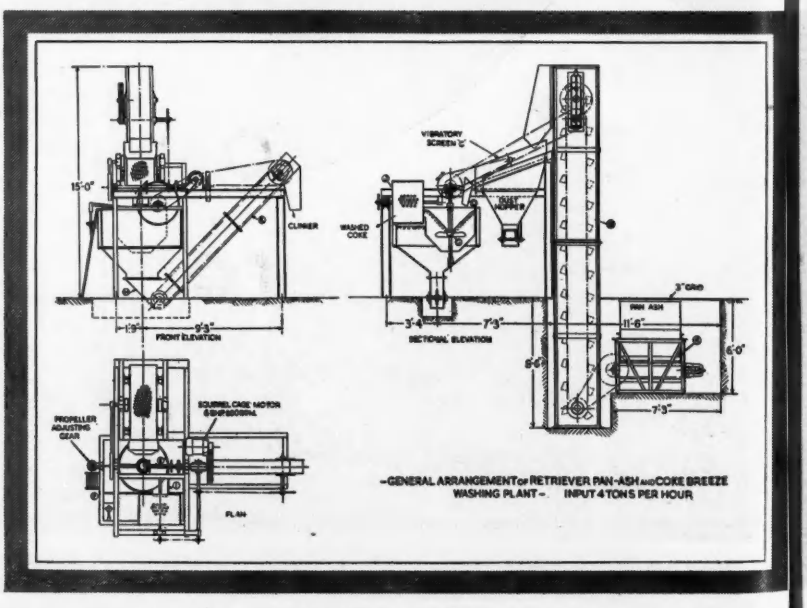

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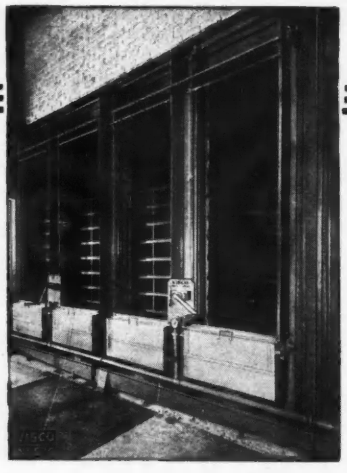

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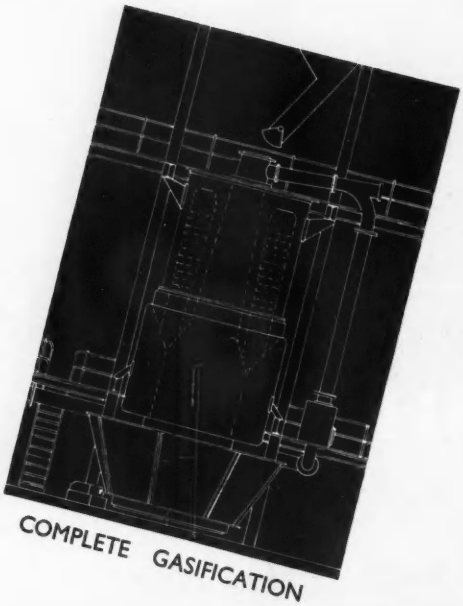

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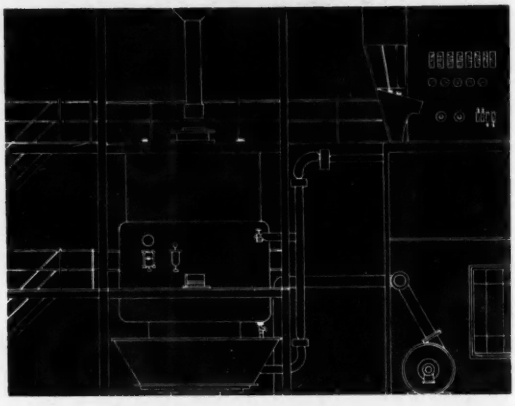

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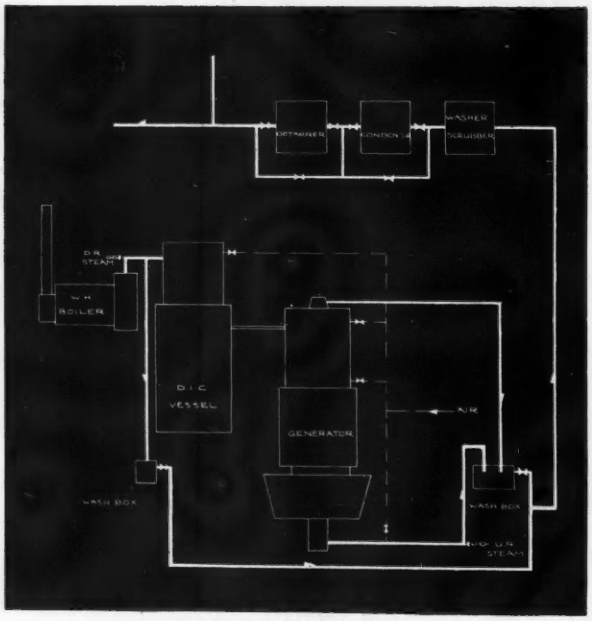
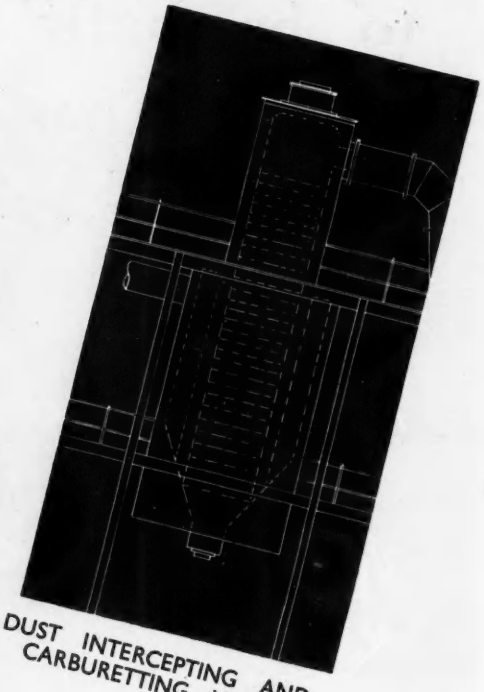


FLOW DIAGRAM



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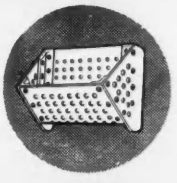

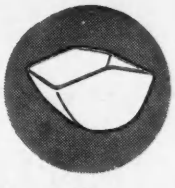

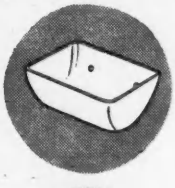

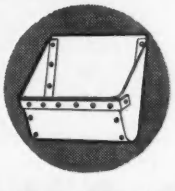

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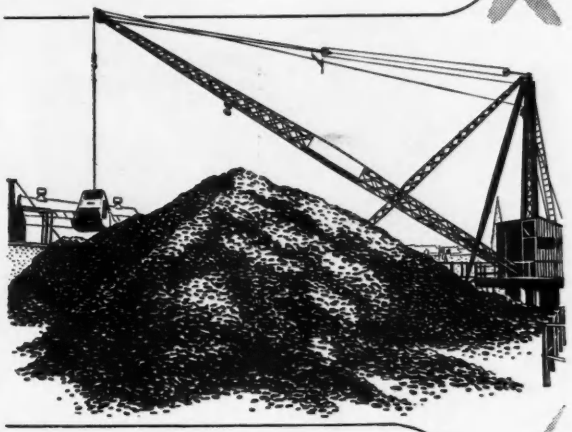

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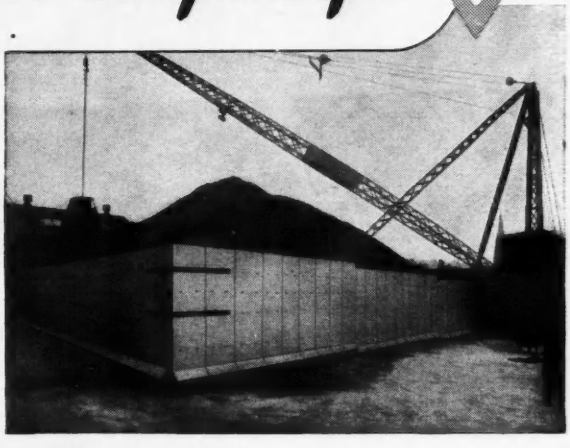

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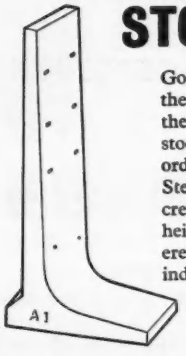

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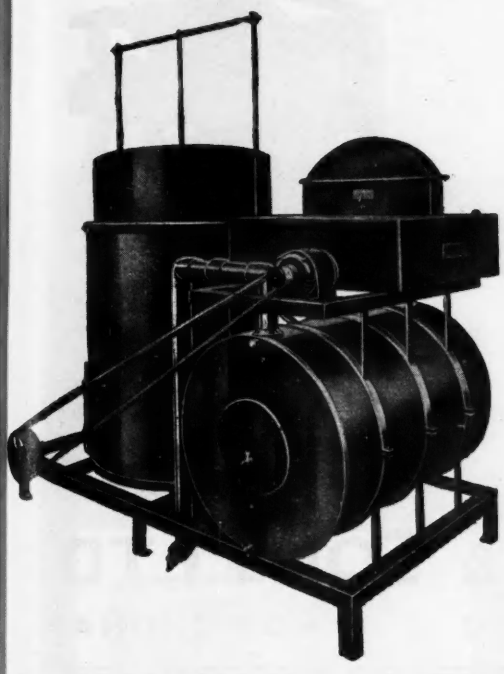

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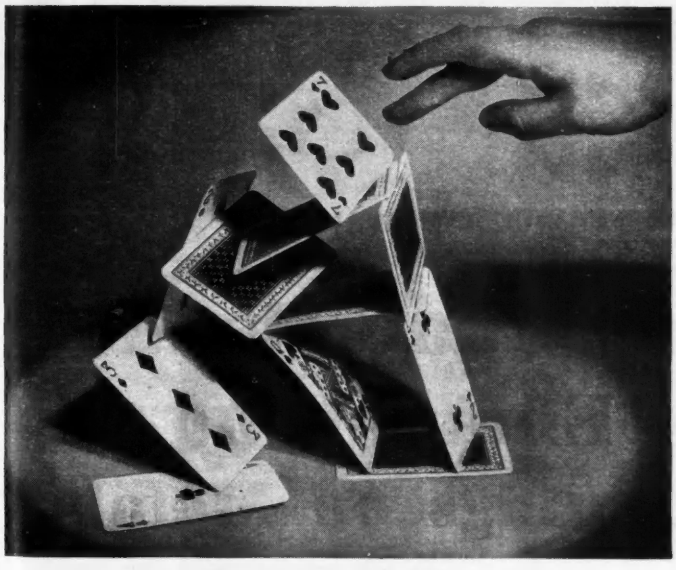

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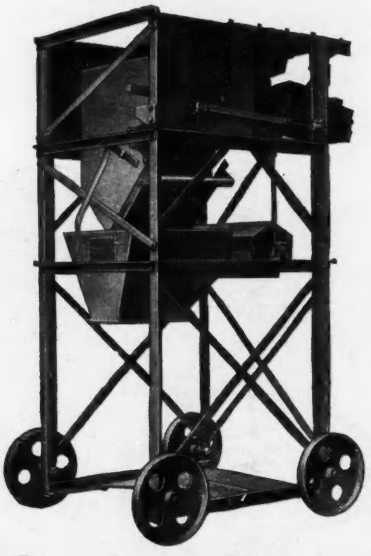

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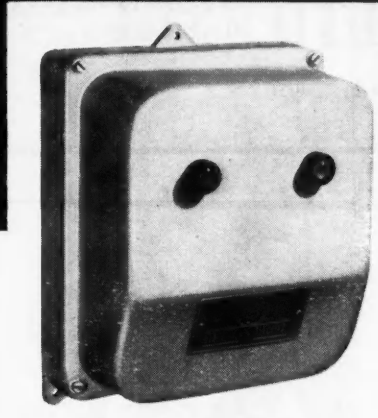

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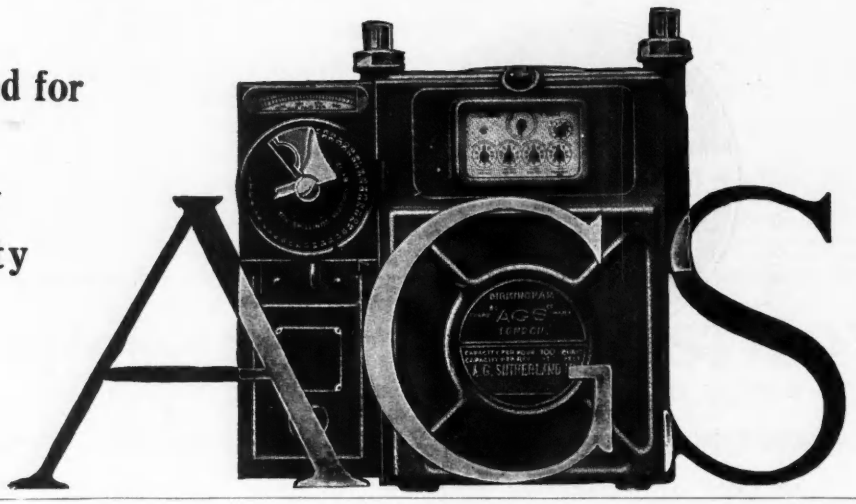

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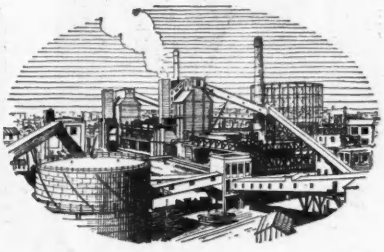

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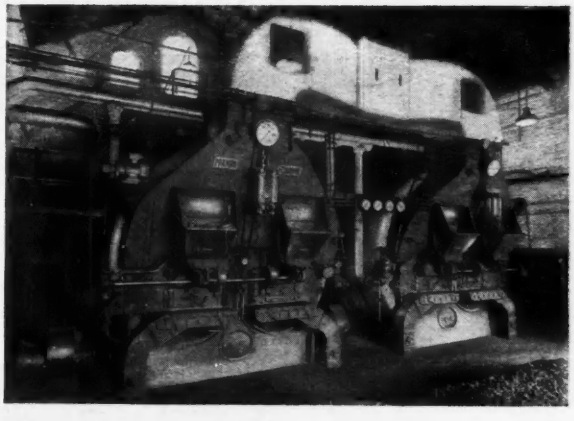

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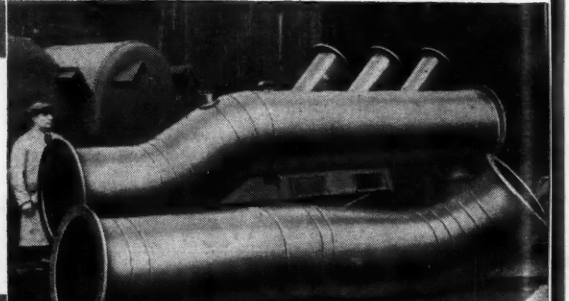

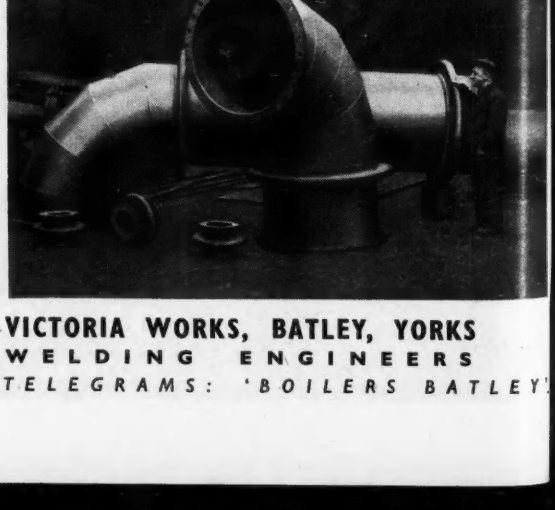

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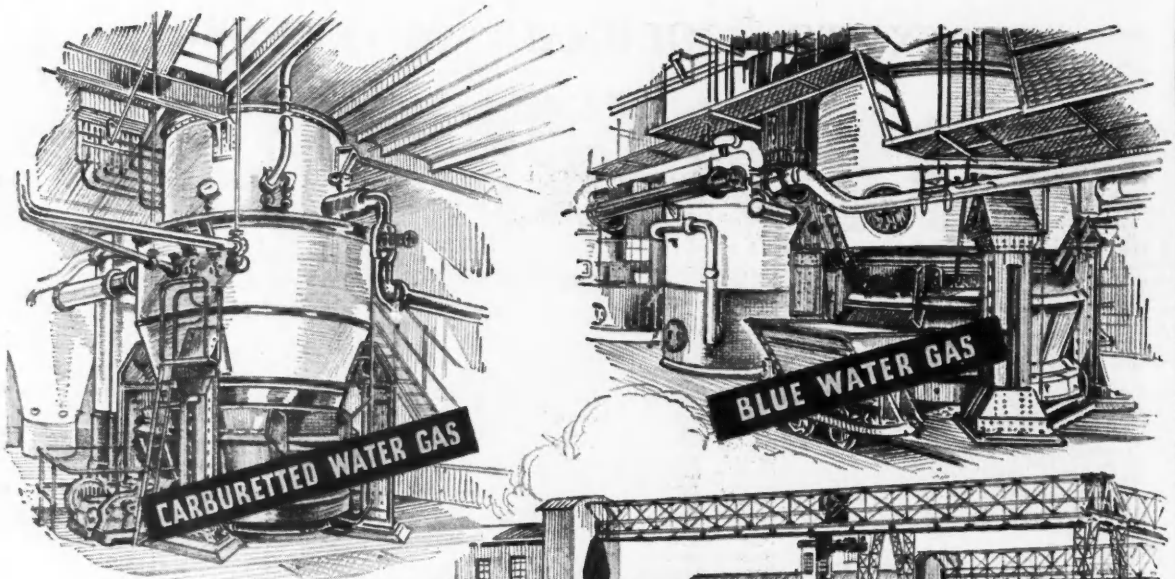

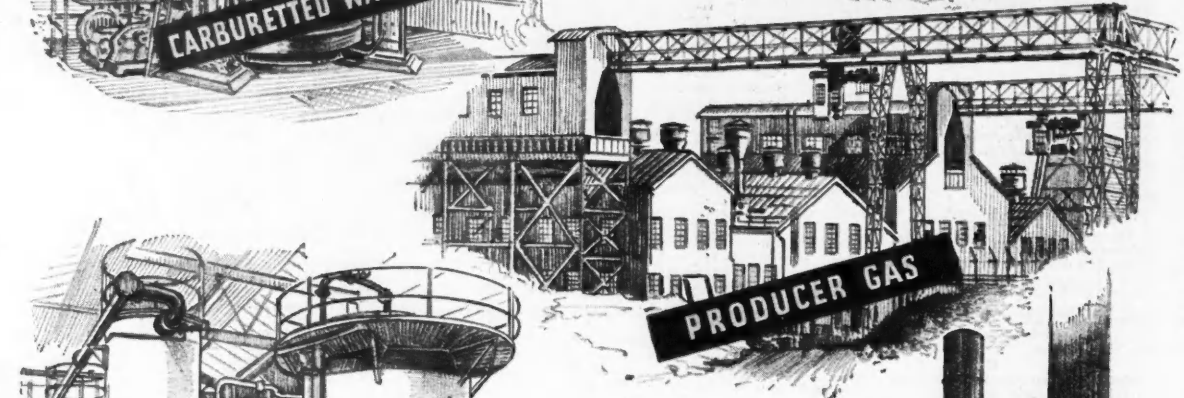

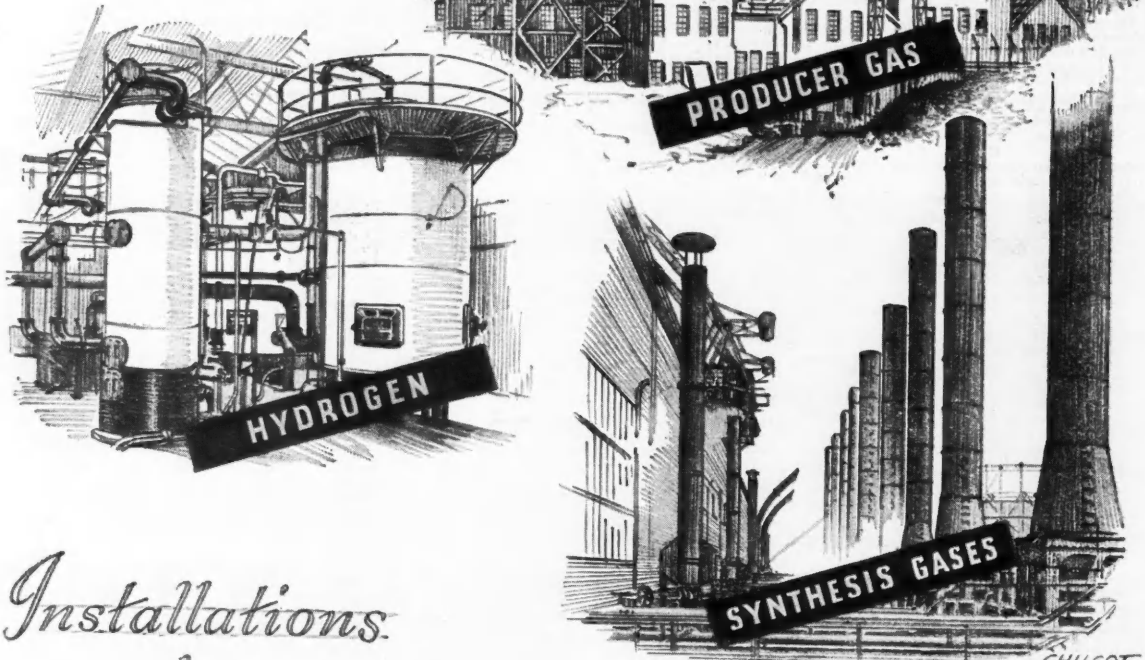

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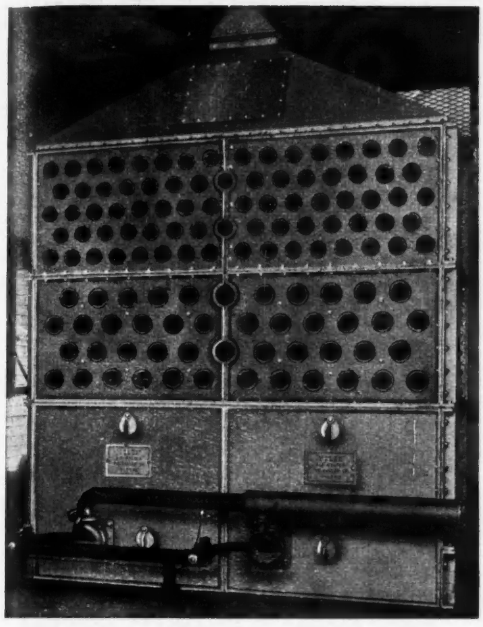

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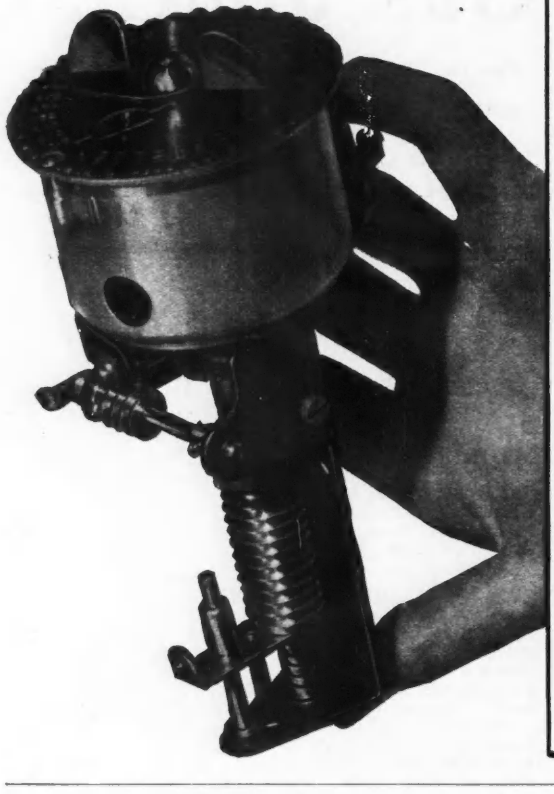

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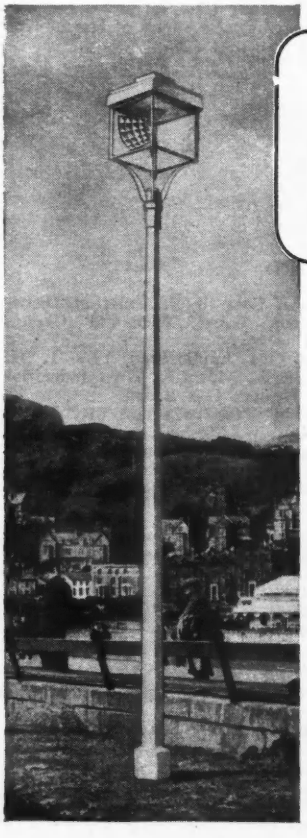

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GAS JOURNAL

VOL. 272. NO. 4669 104TH YEAR NOVEMBER 26, 1952

THE WATER HEATING LOAD

THE story of the incidence of purchase tax on gas water heaters is indeed strange. It reads as follows: October, 1945, tax of 33⅓% removed; April, 1947, tax re-imposed at 66⅔%; November, 1947, tax increased to 75%; April, 1948, tax increased to 100%; June, 1948, tax reduced to 66⅔%—which figure stands today. All this has not helped the manufacturers of water heaters and, indeed, the gas industry, to plan effectively, and by and large the tax is on cleanliness and hygiene. The while the Government lays down measures to secure healthy conditions in shops, canteens, catering establishments, and other places. We have commented on the inequity and illogicality of this tax in our columns on many occasions; we return to the subject in view of the recent paper by Mr. R. J. Gregg, Publicity Manager to the Gas Council, referred to in our issue of October 15 last (page 148), and also in view of the restricting influence of the Hire Purchase and Credit Sale Agreements (Control) Order, 1952, repeatedly mentioned by the area gas boards in their reports for 1951-52.

In his paper Mr. Gregg gave figures of importance and significance relating to the development of the water heating load since 1930. During the period 1930-44 approximately 1,200,000 gas water heaters were installed. Of these, 250,000 were storage and the balance of 950,000 were instantaneous types, and analysis of the course of development clearly shows that the domestic hot water load had not been seriously exploited prior to 1930. After that year progress was rapid. In 1934 there was a 50% increase over the previous year in the sale and installation of water heaters; 100,000 appliances were sold in 1936 and the number was doubled in 1937 and 1938. Advent of war inevitably caused recession in sales, and during the war period itself only about 160,000 appliances were sold. The incidence of purchase tax has cramped development since the war, but there is no doubt about the very great potentiality of the water heating field. Impressive evidence on this score is contained in the special report just published by the Department of Scientific and Industrial Research following an enquiry into domestic hot water supply in Great Britain. Mr. Gregg maintains that a sales estimate of a million appliances is reasonable enough for 1953-55; indeed, he regards this as a conservative basis on which a progressively increasing load could be built. With this as a background he very rightly urges that the gas industry should make up its mind about tackling the hot water load, define the principles to be followed, and plan accordingly. Not to act with determination is to our mind to default in public service and, incidentally, to play into the hands of competition.

COMBINED OPERATIONS

THE interlinkage and co-ordination of the gasworks in the three groups Liverpool, Wirral and South Lancashire, of the north western area, so concisely described by Mr. W. S. Hubbard and Mr. S. Ashworth at the recent conference of the North Western Gas Board, is an excellent example in the evolution of gas manufacture and supply freed from the interference of local interests and influenced only by considerations of the best that can be attained in administration and plant operation. Carbonising plant, like most of the other mechanical and technical processes known to man, is capable of working at its maximum efficiency when operated under constant load and under steady physical conditions. This desirable condition is obtainable in an area of gas supply when the constituent elements of plant are operated and co-ordinated in the manner set out in the paper.

Twice we are told that the continuous vertical retort is highly suitable for base load operation; once we catch a hint of what will seem heresy to many designers and operators of such plant—the production of high calorific value gas in verticals with external dilution. Surely this is putting the clock back. The whole trend and direction of the evolution of the continuous vertical retort, since the Gas Act of 1920, has been towards that of a plant in which gas can be produced in a single process

at any desired calorific value within a pretty wide range at a thermal efficiency unsurpassed by any extant plant or combination of plant. What is not known is at what calorific value this process will yield optimum all round results with any given coal, maximum coal economy, and capital and labour economy—that is to say, the optimum production per unit of plant—while retaining thermal efficiency at the highest level. Thermal efficiencies at least equal to those quoted in the paper have been regularly maintained with those coals at 450 B.Th.U. per cu.ft. Such a combination of plant as envisaged in the paper gives a golden opportunity for invaluable data to be accumulated.

Working this type of plant under these conditions—and it is doubtless true for any type of plant—the best results are obtained for the reasons set out by Messrs. Hubbard and Ashworth. Modifications in plant technique can be closely studied and variations in thermal yield, plant output, and fuel consumption can be matters of immediate and pressing concern. Hitherto, plant tests have been, speaking comparatively, spot tests. Here, there could be long-term trials showing to what pitch of efficiency a plant could be nursed with plenty of time to do it.

But the paper is of great interest for other reasons. It shows in action a sort of grid with production stations spread over it and where conditions should be the best both for judicious concentration and selection of manufacturing methods with transmission costs at their lowest. And consumption centres are not so far apart that the distribution of coke should, in the words of the paper, 'inhibit the implementation of the scheme.' Gas distribution costs are also likely to be 'of a very low order.'

The geography of the country covered by the three groups is, in the nature of things, unique—stretching from Southport in the north to Warrington in the east, out to Hoylake in the west, with Liverpool and its great works in the west-centre and with the Wirral cut off by the Mersey estuary under which a linking main is to be taken to Birkenhead. The whole district is readily connected with Manchester and south-east Lancashire, together the most highly developed industrial area of its kind in the Kingdom.

The north western area is suffering today from financial difficulties. It is clear that the implied challenge is being vigorously taken up by the Board and its officers. The campaign of 'combined operations,' outlined in this paper is, we believe, only one item in a policy which we feel sure will lead to the rehabilitation of the north western area. Everyone in the industry will wish them well.

METHANE AS TOWN GAS

COLONEL HAROLD SMITH told the Press conference on the third annual report of the Gas Council that one of the most interesting matters on which the Council is co-operating with the National Coal Board is the question of the use of methane, which is being drained from coal mines ahead of the coal working. The removal of the methane, he pointed out, not only makes for greater safety in the mines but gives promise of its utilisation to replace or to supplement ordinary coal gas supplies in selected areas. Considerable quantities of methane are being collected and distributed from coal mines on the Continent and there are possibilities that increasing quantities of such gas may become available from mines in the United Kingdom. A joint committee of the Gas Council and the National Coal Board has been appointed to examine the possible use of the gas in the national interest. While the overriding idea is to make collieries safer there is undoubtedly a future for methane. A little over three months ago Lord Adams, a member of the Northern Gas Board, stated that a scheme to supply the greater part of Cumberland with methane from West Cumberland collieries, displacing coal gas for domestic and industrial purposes, was envisaged by his Board. Ten boreholes, each 150 ft. to 200 ft. deep, were at that time extracting methane from a seam running four miles under the sea at Haig Pit, Whitehaven. The annual report of the Northern Gas Board does not go into detail but records that the Board is 'taking an active interest' and that discussions have taken place with the Northern (Northumberland and Cumberland) Division of the N.C.B. as to the provision of an experimental supply of this gas at Whitehaven. The Board has also expressed its willingness to discuss the provision of a similar supply for a limited period to a private firm interested in methane as a basic chemical material.

The Wales Board is also interested in the use of methane for town gas supply and reports that negotiations with the National Coal Board for the use of methane from the Point of Ayr Colliery, Flintshire, are continuing. Closely related to the utilisation of methane is the possibility of discovering usable quantities of natural gas in this country—a matter which Colonel Smith says the Gas Council hopes to investigate in conjunction with one of the oil companies. As a result of oil boring activities by an exploration company a supply of natural gas of unknown quantity, and at a pressure of over 1,000 lb. per sq. in., was located some years ago in the north of England. The Northern Gas Board reports that interest in this gas for chemical purposes has developed latterly, and a tentative project has been outlined for its transmission to works in the Board's area and its employment there. Last month it was reported that boreholes were to be sunk in search of natural gas on a farm at Eskdale, North Yorkshire, and that if gas is found in worthwhile quantities it will be bought by Imperial Chemical Industries, Ltd., from the D'Arcy Exploration Co., Ltd.

ARE POWER CUTS ILLEGAL?

COMPETITION, we are taught, is good for business no matter what the sphere. We are therefore open to the suggestion that competition may be good for consultative councils. Anyway, the people of Bournemouth have decided to try the experiment by forming an independent Gas and Electricity Users' Association. This organisation, we understand, came into being following the introduction of the Southern Electricity Board's new tariffs, in connection with which there was a strong feeling locally

that the consultative council was not effectively representing consumers' interests. The new Association has started its work in attempting to prove not only that the new electricity tariffs are illegal and that the Board is showing undue discrimination against consumers in larger houses, but—of much wider interest—that the whole system of power cuts is illegal in that the Board is not allowed to vary the voltage at the terminals by more than 6% either way. No doubt, legal brains will find some 'escape clause' in this latter contention; if they do not, the repercussions may, to say the least, be intriguing. We have yet to learn what bombshells this enterprising body has in store for the Gas Board. However, it is not a very encouraging reflection on the set-up of either industry's consultative machinery that local opinion should be strong enough to lead to the formation of a second line of consumer defence.

Personal

Mr. H. G. Carter, A.C.A., Secretary of Lancashire Dynamo Holdings Ltd., has been appointed to the Board.

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Mr. S. C. Porter, A.R.I.C., Chief Chemist, Ipswich, Eastern Gas Board, has been appointed Divisional Chief Chemist at Birmingham, West Midlands Gas Board.

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Mr. George Helps, Nuneaton district Engineer and Manager, West Midlands Gas Board, is to retire at the end of next month after 41 years' service at Nuneaton. He joined the old Nuneaton Gas Company in 1911 and succeeded his father as Engineer and Manager in 1946.

◇ ◇ ◇

Mr. Ernest Ablett, O.B.E., Engineer, Manager, and Secretary of the Swansea undertaking and Chairman of the Swansea group, presided at the recent annual dinner of the Swansea branch of the Chartered Institute of Secretaries, and the principal guest was **Mr. J. R. W. Alexander,** President of the Institute and Executive Chairman of the Gas Officers' Guild.

◇ ◇ ◇

Sir Edgar Sylvester, the first Chairman of the Gas Council, and previously Governor of the Gas Light and Coke Company, has accepted the Chairmanship of the Sierre Leone Development Company, a private company which mines iron ore in the colony. Sir Edgar retired from the Chairmanship of the Gas Council last December.

◇ ◇ ◇

Miss C. E. Ellington Wright, M.B.E., of the North Thames Gas Board's public relations department, has been elected first Vice-President of the National Council of Women of Great Britain for the year 1952-53. Miss Ellington Wright held the office of Chairman of the Women's Gas Federation from 1949 to 1951, and is now a vice-President-elect of the Federation, which is one of the 90 national bodies affiliated to the National Council of Women.

◇ ◇ ◇

Mr. E. G. Brooks has been appointed General Works Manager of the Gas Group of Thomas De La Rue & Co., Ltd., responsible for the production side of the group's activities He will also act as Technical Manager with responsibility for technical research and development. **Mr. J. W. Pringle** has been appointed Development Manager; **Mr. E. E. Blandon,** Research Manager, and **Mr. J. R. Knott,** Export Manager responsible to the General Sales Manager, **Mr. M. B. Jordan. Mr. A. G. Norman,** who has been connected with the security side of the De La Rue organisation, has been appointed General Manager of the Industrial Group, covering plastics and gas.

Mr. A. H. Small has joined the technical staff of Henry Balfour & Co., Ltd., of Leven. He was formerly District Manager of the Hornsea gas undertaking of the North Eastern Gas Board. Mr. Small received his training as a gas engineer with the East Hull undertaking. He served with the R.E.M.E. during the last war.

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Mr. J. Rose, the Manager of the Bourne (Lincs.) gas undertaking since 1922, who is retiring through ill-health, has been presented on behalf of the employees with a fountain pen. The gift was handed over by Mr. W. Williamson, one of the oldest employees. Mr. Rose has been in the gas industry for 46 years. He started at Sleaford and after five years moved to the Harpenden and District Gas Company. Two years later he joined the Sunderland Gas Company. In 1912 he secured an appointment at Uttoxeter to which he returned after service in the 1914-18 war, remaining there until he went to Bourne in 1922. While he has been at Bourne the production of gas has increased from 12 to 42 mill. cu.ft.

Diary

Nov. 27.—North Thames G.C.C.: Westminster City Hall, Charing Cross Road, W.C.2. 2.30 p.m.

Nov. 29.—Wales (North) Juniors: 'The Administration and Development of a Small Undertaking,' W. E. Whitney; Royal Hotel Ballroom, Caernarvon.

Dec. 1.—West Midlands G.C.C.: Queen's Hotel, Birmingham, 2.30 p.m.

Dec. 2.—South Eastern G.C.C.: Caxton Hall, Westminster, 10.30 a.m., followed at 2.30 p.m. by combined meeting of Consultative Council and District Committees.

Dec. 3.—Southern G.C.C.: Grand Hotel, Bournemouth, 11 a.m.

Dec. 5.—London Juniors: Reception and Dance. Caxton Hall, Westminster, S.W.1, 6.30 p.m.

Dec. 6.—Scottish Juniors: Joint Meeting of Eastern and Western Districts. 'Some Problems of Large Scale Organisations.' Dr. J. G. Davidson, Chief Financial Officer, Scottish Gas Board, at Heriot Watt College, Edinburgh, 3 p.m.

Dec. 8-12.—Smithfield Show, Earls Court. Gas Council exhibit.

Dec. 10.—Eastern Juniors: Visit to works of Bratt Colbran & Co., Ltd., Lancelot Road, Wembley.

Dec. 10.—London and Counties Coke Sales Circle: Christmas Party, Holborn Restaurant, 2.30 p.m.

Dec. 10.—Institute of Petroleum: Papers on production, distribution, and applications of liquefied petroleum gases; 26, Portland Place, W.1., 5.30 p.m.

Dec. 12.—Scottish (Western Juniors): Film night; 'Construction of a new gasholder at Alloa Gasworks,' D. C. Dow, Alloa.

Dec. 12.—London Juniors: Address by J. S. Barnes, LL.B., Solicitor, North Thames Gas Board, 178, Edgware Road. 6.30 p.m.

Dec. 13.—Manchester Juniors: President's Day, Visit to Salford undertaking.

Dec. 13.—Western Juniors: Visit to Torquay works; 'Mains Extensions in relation to Housing Development,' R. Pratt, Taunton.

Dec. 16.—London Juniors: Alternative evening visits, 8.30 p.m. Newspaper Offices:—*The Times,* and *Daily Graphic.*

Dec. 16.—Midland Juniors: 'Use of Gas in the Manufacture of Pottery,' K. Davis, Stoke-on-Trent.

Dec. 16.—London and Southern Section, I.G.E.: 'The Supply, Transport and Distribution of Coal to the South Eastern Gas Board,' A. G. Gostelow: 17, Grosvenor Crescent, S.W.1. 2.40 p.m.

Dec. 18.—Institution of Heating and Ventilating Engineers: Joint meeting with Institute of Fuel, East Midlands Section, at 6.30 p.m.; 'Plant Control through Instruments.' J. E. O. Breen.

PERSONAL AND OFFICIAL LOYALTY

THE Chairman of the Wales Gas Board, Mr. T. Mervyn Jones, presented certificates and vouchers for long service at a recent ceremony at Pontypool. Mr. Mervyn Jones said one of the gas industry's proudest boasts was that it had provided employment which was secure and which the workers felt was worthwhile, marked by that personal touch between management and employees which the Board was anxious to continue. It wished to achieve the technical and other benefits of a large-scale organisation while escaping the disadvantage of dehumanisation which was sometimes experienced in organisations which were too large. Personal loyalty was at the root of official loyalty to the industry at large.

Mr. R. S. Snelling, Deputy Chairman, who has himself a record of 46 years' service to the industry, paid tribute to the drive, enthusiasm, and initiative of the Chairman, who, he said, was keen to continue the custom of recognising long service which had been in vogue in some companies for years.

Mr. T. Mervyn Jones, Chairman of the Wales Gas Board, in the centre, with (right) Mr. R. S. Snelling, Deputy Chairman, and (left) Mr. J. Powdrill, Engineer and Manager at Pontypool and Chairman of the Pontypool Group.

The recipients were:—I. Rowley, mains and service layer and fitter, Abergavenny (46 years); S. Higgins, works attendant, Pontypool (44 years); F. Constance (retired) Pontypool (43 years); N. Price, chief prepayment meter collector, Pontypool (42 years); M. H. Millett, manager, Beaufort (43 years); W. Savage, manager, Brynmawr and Blaina (42 years); A. Hall, distribution superintendent Abertillery (42 years); E. Shears, distribution superintendent, Pontypool (40 years); C. C. Williams, fittings accounts clerk, Pontypool (40 years).

PORTSMOUTH'S NEW CATERING COLLEGE

THE new extension of the Municipal College, Portsmouth, which was opened on October 24 by the Duke of Edinburgh, includes one of the largest and most up-to-date catering sections in this country, and will deal with the training of cooks, chefs and catering personnel from Portsmouth, Winchester, and Southampton.

In co-operation with the architects department of the City of Portsmouth, Benham & Sons, Ltd., planned and designed the kitchens, which not only fulfil the primary function of teaching cooking and catering, but also provide a direct cafeteria service for students of the college. About 450 meals will be served in the main dining room, which is capable of seating 150, and 160 meals at two sittings in the waiters service restaurant seating 80. The latter is open to the public who gain access by an ingenious glass-enclosed staircase without entering the college itself. The cafeteria and waiters service restaurant will enable students to receive practical experience in the various service methods and under actual working conditions.

This project is planned on the lines of a commercial restaurant or hotel, the only difference being that the cooking apparatus is so positioned and spaced to facilitate group instruction and training. An interesting feature of the Benham fish fryer is that the back has been utilised to act as a large blackboard.

The cafeteria service has a glass wall, which allows daylight to pass through to the instructor's office and vegetable preparation department. The counter opening is 30 ft. long, while the tray slide is curved through 90° with an 8 ft. radius up to and beyond the cashier's desk.

As the cafeteria and restaurant are so conveniently located, it was possible to utilise one wash-up, which contains a Benham 'Hecules' dishwashing machine fitted with inlet and outlet tabling.

Apparatus manufactured and supplied by Benhams include two 6-unit central 'Solid-top' gas ranges with bain marie and hotcloset at one end; three electric and three gas pressure steamers; two gas stockpot stoves; two gas boiling pans; two grillers and salamanders; one under-fired gas silver grill; double deck electric pastry oven; gas boiling stove; two gas tea and coffee sets and service hotclosets; five single gas 'Solid-top' range units and five single electric 'Cavendish' range units; and 'Hercules' dishwashing machine. Stainless steel sinks and hardwood drainers, preparation tables, and a large range of catering utensils were supplied by the company, while the kitchen installation was also carried out by Benham & Sons, Ltd.

General View of Kitchen

SOUTH EASTERN TEAM COMPETES FOR GRAND PRIOR'S TROPHY

THE South Eastern Gas Board's first aid team which lately won the St. John Ambulance Association Trophy for the best team in the gas industry, represented the industry in the third annual competition for the Grand Prior's Trophy at the Central Hall, Westminster, on November 18.

There was very strong opposition from teams representing the St. John Ambulance Brigade, fire brigades, police and miners, whose normal calling gives them experience, and the test was a severe one. It had a topical flavour for it involved giving first aid to a lorry driver who had been attacked by two thugs and sustained a fractured spine and jaw, concussion and other injuries. A little light relief (but not to the team) was provided by a delivery boy on a bicycle cannoning into the workers just as they were finishing their task.

The South Eastern Gas Board team was unchanged from that which received the challenge trophy for the gas industry on October 22 (see *Journal* of November 5, page 330). They performed the test well inside time and to lay observers in the hall appeared to have scored well, but when the results were announced they were found only to have made ninth place with 230 marks scored out of a possible 400. The winners were the fire brigades team from Great Yarmouth with 292½ marks, with the Metropolitan Police (L Division) runners-up with 291½ marks.

Individual tests, consisted of first aid to an elderly man who had fallen from steps while cutting a hedge and to a builders' workman who had been knocked down by a truck. South Eastern scored 121 marks in this out of a possible 200, compared with the winners' total of 172. South Eastern had scored 334½ marks when winning the trophy for the gas industry, but the tests for the blue riband of the competition were much more severe and opposition very strong.

The Earl of Athlone presented the trophies and medallions and congratulated every one on the high standard of performance. Colonel Harold Smith, C.B.E., D.L., Chairman of the Gas Council, attended the presentation ceremony.

The South Eastern Gas Board team in action during the test for the Grand Prior's Trophy, held at the Central Hall, Westminster.

Coke Sales Circle

THE next meeting of the London and Counties Coke Sales Circle will be held at the Holborn Restaurant on December 10, at 2.30 p.m. It will take the form of a Christmas Party, and the Committee has divided the programme into three items. The first two items will assist in introducing members to one another and will enable producers and distributors to get together. Mr. F. S. Evans and Mr. R. S. Hopper have agreed to deal with this instructive and entertaining part of the programme.

In the third section members will be divided into small groups, each group having a leader. A question of interest to the coke trade will be given to each group for discussion. When all groups have finalised their views on the problem, the Chairman will call on a member to give the views of his group. It is hoped that the leader will be able to gather his group together prior to the meeting, but, in any case, it is intended that an hour should be allowed over tea for the groups to discuss their problems.

Groups and leaders have to be chosen in advance of the meeting and a small sub-committee has been elected to do this from the members who intend being present. The sub-committee will also set the questions for consideration by each group.

A Belt to be Proud of.—A B.T.R. Long-life conveyor belt was recently taken out of service after carrying 4 mill. tons of ore for Dorman Long and Co., Middlesbrough. It was a 54 in. 10-ply belt, operating between primary and secondary crushers.

STANLOW REFINERY VISITED

ON October 28 members of the North Wales Section of the Wales and Monmouthshire Junior Gas Association paid a visit to the Stanlow Refinery of the Shell Company. Before inspection of the plant, Mr. Broomhead gave a talk on the development of the refinery over the past 30 years, followed by a resumé of the various distillation processes necessary to produce both high grade lubricants and motor spirit. The information that the refinery marketed over 200 finished products ranging from detergent soap powder to aviation spirit came as a surprise to the majority of the visitors.

After inspecting the docks on the adjacent Manchester Ship Canal where five 12,000-ton tankers can be berthed simultaneously, the members were entertained at lunch in the staff dining hall. Following lunch the visitors inspected the distillation plants for producing high grade industrial lubricants, particular interest being shown in the sulphur recovery plant which reclaims 10,000 tons of sulphur per year from oil.

Undoubtedly the highlight of the afternoon was the examination of the modern distillation plant recently installed to treat the Middle East crude oil. In this plant crude oil is vaporised in oil-fired furnaces and separated into primary commercial components by fractional distillation. The primary fractions thus obtained are petroleum gas, straight run gasoline, light and heavy naphthas, light, medium, and heavy gas oils, and fuel oil. Naphtha obtained in this process is reformed under conditions of high temperature and pressure to produce a gasoline of improved quality.

To increase the yield of gasoline still further the heavy oils are subjected to a catalytic cracking process, the interesting feature of which was the mobility of the finely divided solid catalyst as it flowed between the regenerator and reactor vessels.

The visit concluded with tea, at which a vote of thanks to the Shell Company was proposed by Mr. J. Woodcock, Chairman of the North Wales Section of the Juniors, seconded by Mr. H. Maycock, Chairman of the Wales and Monmouthshire District Section of the Institution of Gas Engineers. Mr. Broomhead briefly responded on behalf of the Shell Company.

Price of Nutty Slack

THE NATIONAL COAL BOARD has decided that nutty slack—the name given to the small coal free from rationing restrictions after December 1—will be 20s. a ton cheaper than ordinary (Group 4) house coal.

Nutty slack is just what it is called, slack with some nuts in it ranging up to one or two inches in size. It burns brightly and warmly if mixed sensibly with ordinary house coal and is an excellent fuel for banking fires at night. It is just as expensive to mine and transport as ordinary coal, but it is sold at the cheaper price because it is smaller and not as clean.

This small coal can be bought from any coal merchant and will be in good supply throughout most of the country. In Scotland, South Wales, Durham, Cumberland and Northumberland, however, it will not be available, but other off-the-ration coal may be on sale.

IN PARLIAMENT

Gas Workers' Pensions

THE not uncommon phrase, 'Two minds with but a single thought,' found a parallel in the House at Question Time on November 17; but in this instance it was no fewer than four Members with, in effect, a single question, which concerned the payment of increased pensions to retired gas employees formerly of municipal undertakings.

The point was raised by Sir IAN FRASER (Lancaster, Morecambe, and Lonsdale), Mr. SAMUEL STOREY (Stretford), Captain JAMES DUNCAN (Angus and Kincardine), and Lieut.-Cmdr. GEORGE HUTCHISON (Edinburgh, West), all of whom urged that former employees of municipally-owned gas undertakings should be entitled to increases in their pensions similar to those awarded to retired local government officers under the Pensions (Increase) Act, 1952.

Mr. GEOFFREY LLOYD said that the Act mentioned does not apply to nationalised industries, but he was considering whether he should make regulations under the Gas Act, 1948, to give equivalent benefits to ex-municipal pensioners. Pressed to expedite a decision in view of the sense of very real injustice prevailing among these old people who had served their local authorities well and were 'victims of nationalisation,' the Minister said he hoped to make a further statement as soon as possible. The position of those who retired while the service was still under a local authority was also being considered.

Gas in the Potteries

Mr. EDWARD DAVIES (Stoke-on-Trent, North) drew the Minister's attention to the delay in completing a major extension at the Etruria gasworks, Stoke-on-Trent, due to uncertainty of steel supplies and asked what action he was taking to assist in removing the difficulties. The MINISTER said the difficulty related only to certain steel products, but he hoped the position would shortly improve.

Asked for an assurance that wherever this work required supplies of steel he would be sympathetic towards helping to save coal, to get a cleaner atmosphere, and to assist the pottery industry, Mr. LLOYD said that owing to the success of the pottery industry and their enterprise in installing the continuous tunnel type of kiln their consumption of gas had enormously increased, and his Department wanted to do its best to meet them in full in that respect.

Dr. BARNETT STROSS (Stoke-on-Trent, Central) observed that a medium sized factory, using the modern continuous firing process, consumed as much gas as an ordinary township of 30,000 people. Bearing in mind the essential need for as much gas as they could get —although this was the most up-to-date plant in Europe—would the Minister ensure that they got preference for it?

Mr. LLOYD replied that they would do their best because they knew how much it helped to improve the atmosphere of the Potteries.

The Potteries came in for further attention on November 20 when Mr. ELLIS SMITH (Stoke-on-Trent, South) asked the Minister of Housing and Local Government what action had been taken to reduce the smoke poured out over the City since he last raised the matter in question.

Mr. ERNEST MARPLES (Parliamentary Secretary) pointed to the reduction of smoke since gas and electrically fired ovens were installed in place of solid fuel, which process was continuing. Asked if he would take steps to give local authorities more power to deal with the pollution of the air by smoke, Mr. Marples said the Minister regarded the present powers as adequate. The difficulties were practical rather than legal.

Determined that the problems of gas supply in the Potteries should be brought to proper notice, Mr. EDWARD DAVIES put down another question on November 20, asking the Minister of Fuel and Power how far industrial requirements for gas were being met in the West Midlands, with particular reference to the pottery industry.

Mr. JOYNSON-HICKS (Parliamentary Secretary) obviously found himself unable to add much to what had already been said. There were, he observed, many industrialists in the West Midlands who desired additional supplies of gas—largely in place of other forms of fuel. The Gas Board, he added, had in hand projects which, *when completed* (the italics are ours), will fully meet this additional demand.

Combined Works

Sir WILLIAM WAKEFIELD (St. Marylebone) asked the Minister of Fuel and Power what action was being taken to combine gas and electricity works, in particular at the pit-head, with a view to utilising low-grade material on the site and for the generation of power from waste heat at the gasworks and from their coke breeze.

In a written reply, Mr. LLOYD stated that there were no combined gas and electricity works, but the larger gasworks used their waste heat for power requirements and the electricity generating stations regularly used coke breeze when it was available.

Distribution of Gas Company Reserves

AS a result of a ruling by the Court of Appeal, stockholders in certain of the now nationalised gas companies may find themselves entitled to a distribution from the reserves held by these companies at the time of nationalisation.

Companies which may be affected are some basic price and dividend concerns, where the statutory reserve fund could be used to increase or to maintain the basic rate of dividend on the ordinary stock in any period. In many cases companies did not pay the maximum dividend permitted and allocated the difference to the reserve. Certain companies, however, whose gas charges were above the basic prices would not qualify.

The Court of Appeal has upheld, except on one point, a judgment given in March by Mr. Justice Vaisey against the North Eastern Gas Board. Under his ruling, the stockholders' representative of the Morley Gas Company was permitted to pay ordinary stockholders, out of funds paid to him by the Gas Board, the sum standing to the credit of the reserve fund of the company an vesting day. Under the Court of Appeal's ruling, however, the payments are now to be made less tax and not, as previously ruled, tax-free.

The Gas Board was given leave to appeal to the House of Lords, but it is not yet known whether such an appeal is to be made.

The *Financial Times* observes that although many basic price gas companies would not qualify under the ruling, owing to the different constitution of their Special Acts or Orders on basic prices and dividends, there are several whose cases may be similar to that of the Morley Gas Company. These might include: Tottenham, Romford, Swansea, Cardiff, Stroud, Gloucester, and Cheltenham.

In addition there are a number of companies which might be able to make similar claims but whose affairs would have to be re-opened since the stockholders' representatives have closed the affairs of the companies. They include South Metropolitan, Sheffield, Newcastle-upon-Tyne, Southampton, Weston-Super-Mare, Solihull, and Windsor.

A Home Service Stand was arranged by the Colwyn Bay group of undertakings at the Colwyn Bay and District Horticultural Society's show recently held at the local pier pavilion. The stand was staffed by home service personnel, the main theme being 'Any Questions' on fruit preservation and cooking. The opportunity was also taken to issue leaflets on fertilisers and greenhouse heating, etc.

Liquefied Petroleum Gases.—Members of the Institution of Gas Engineers are invited to a meeting of the Institute of Petroleum at 26, Portland Place, W.1, on December 10, at 5.30 p.m., when papers dealing with the production, distribution and applications of liquefied petroleum gases will be presented. Light refreshments will be served at 5 p.m. Preprints of the papers will be available, price 1s. each, on application to the Secretary of the Institute of Petroleum.

Further Spate of Increased Costs

May Lead to Dearer Gas

REVIEWING the past year's results at a meeting of the Eastern Gas Consultative Council at the Connaught Rooms on November 17, presided over by Alderman R. Turner, J.P., Sir John Stephenson, C.B.E., Chairman of the Eastern Gas Board, said the Board seemed to be running into a further spate of increased costs. The recent increase in manual workers' wages would add £125,000 a year to the wages bill, and applications had been lodged by the staff side for corresponding increases. The proposed 5% increase in rail freights would add a further £100,000 to the Board's costs and there was always in the background the possibility that coal would again be increased as a result of the miners' wage demands.

Higher Interest Rates

Another feature affecting the Board's economy was the higher rate of interest on borrowed money. In its early days it was able to borrow temporarily at 2%, and the first issue of British Gas Stock, made shortly after vesting day, carried interest at 3%. This stock was issued at a slight premium. Today interest on temporary borrowings was 4% and the recent issue of 4% British Transport Stock at 95½ gave some idea of what might be expected when temporary borrowings were funded by public issue.

The Board was anxious to introduce stability into gas prices, and it appeared a few months ago that it was in a position to do so, but events were again tending to move against them. Even the weather in the first six months of the present financial year was not on their side, because for the first quarter they recorded a decrease in gas sent out of some 6½%, but they had an improvement in the second quarter, and by the end of September the decrease had been reduced to 2½%. At the present time they were recording a decrease for the financial year to date of 1.4% compared with the same period last year and this rate of decrease was not out of step with that of other boards in the southern half of the country.

Manufacturing plant was very costly, and the aim of the Board was to concentrate it in larger units at selected works so that maximum efficiency and economy of production would accrue. These selected works would remain as future manufacturing stations from which they were steadily pushing out transmission mains to link up with neighbouring towns and villages where the smaller and less efficient works would be shut down.

An experiment was being made at Bungay and Framlingham, isolated small units, where existing plant was obsolete and costly to run, to provide a gas supply of butane-air. Whether they extended this form of supply would depend largely on the price on a long-term basis at which the oil companies were prepared to offer this refinery product of liquid petroleum gas. They were also exploring the possibility of bringing a base load supply of coke oven gas from installations at or near the collieries of the Midlands. While the long distance transmission of gas at high pressure was well known in the United States and on the Continent, it had not been exploited to any great extent in this country. Again the development would depend on whether the price of coke oven gas plus pumping and distribution costs showed an economic advantage over local production.

The supply for Norfolk, centred largely around Norwich, but including some 25 other works mostly small in character, while being assured for some time, presented an interesting but complex problem for the future. The Board had considered localising production at a works on the seaboard, but the maximum advantage from such a project could only be gained by using seaborne coal, preferably from the Durham fields, and if the bulk of their supplies had to come railborne from the Midlands, the advantage would swing to a new works within the environs of Norwich. What decision would eventually be taken was quite impossible to foresee. Their technicians were surveying the whole field, following which they hoped to make firm proposals.

Consultants Called In

Referring to decentralisation and the structure of the Board's five divisions, Sir John said any progressive commercial concern would regard constant review of organisation as necessary, and the Board had striven to prove that efficiency could be achieved without extravagance in organisation and personnel. One of the interesting features of this work was the Board's decision to employ a well-known firm of business consultants to report, in the first place, on the administration of certain departments in one of the larger divisions.

By adopting the consultants' recommendations, substantial economies had been achieved, and so successful was this move that the Board decided to extend their services into another division. Although the organisation in this division was different in some respects it resembled the first in certain departments. The present work had only just started, but it was hoped that here too the general pattern of economies would be developed. The other three divisions were rather differently constituted. The aim here had been to strengthen the group administration so as to enable the district manager to concentrate on his main functions of gas production and supply, relieving him of office work, such as rendering and collection of consumers' accounts, the preparation and payment of wages and salaries, the recording of expenditure and the settlement of creditors' accounts, and other work, all of which could be carried out more economically in the larger units.

The Consultative Council, after hearing Sir John Stephenson's review, discussed the Ridley report on national fuel policy and expressed disappointment that no definite lead had been given. Members realised that although they were interested in the most efficient way of dealing with our coal resources, the matter did not fall strictly within their province as a Consultative Council.

The Chairman said the Council had always advocated freedom of choice as its policy, because it had been shown that on some local authority housing estates, gas was not being installed. Where gas mains had been laid to new housing estates, it was obvious that an adequate share of the business must be obtained if these extensions were not to be a charge on the general body of gas consumers. The Electricity Board took the same view—*i.e.*, in striving to obtain a larger share of the domestic load for cooking, heating, and water heating in addition to lighting and small power points, in order to justify capital expenditure.

The Ridley Committee was satisfied that electricity sold under the domestic two-part tariff at peak periods was sold below the actual cost and this the Consultative Council had always contended.

From the report it was clear that whereas coal and coke were strictly rationed, no control was possible in the domestic use of gas and electricity. Gas could only be sold at its economic price. There was no possibility of charging the industrial and commercial consumers a higher price in order to make gas cheaper to the domestic consumer, and it might be concluded that the electricity two-part domestic tariff was unfairly competing with gas for domestic purposes. The Gas Council had stated in its evidence that the gas industry considered that it was hampered in the free pursuit of its policy by the price policy of the electricity industry, particularly with regard to the price at which electricity was offered for sale to domestic consumers under two-part tariffs.

Subsidising Domestic Comsumers

Members expressed disappointment that the Ridley Committee had not dealt with the problem of the most economical way of dealing with a ton of coal and asked whether it would be possible to establish what had been stated on many occasions, that the industrial and commercial consumers of electricity were subsidising the domestic consumers.

The Chairman stated that recently an account had been rendered for a quarter's electricity which was charged out at 4.15d. per unit and when it was pointed out that the establishment had changed over from a commercial hotel to a private residential establishment, the charge was reduced to 1.625d. per unit, the account being reduced from £18 to £7 0s. 11d., from which it was seen that a commercial establishment would be called upon to pay considerably more than the domestic consumer for precisely the same service.

AMERICAN SPOTLIGHT

Items of Topical Interest from the Contemporary Technical Press of Canada and the United States

THE TRADE-IN PROBLEM

LATE in 1951 several of the retail appliance dealers of Vancouver, B.C., found it was becoming more and more difficult to dispose of trade-in ranges, whether gas, electric or hard fuel. It was obvious that this market was drying up and that conditions in 1952 would be even worse because of less new home building, thereby making the replacement market more important than in the past.

Some dealers were so loaded with trade-ins they reached the point where they refused to take any more. Therefore a trade-in plan was developed by the B.C. Electric Company, Ltd., in which fifteen manufacturers or distributors of electric and gas ranges participated. The manufacturer or distributor accepted a billing from the B.C. Electric of 50% of the $12 or $6 trade-in allowance on each old range scrapped. The B.C. Electric absorbed the $3,342.00 balance and all administration expenses of this plan.

For the greater Vancouver and Fraser Valley areas 557 old ranges were turned in by dealers under this plan during the 3½ months it was in operation. In turn, the manufacturers, distributors and dealers enjoyed 557 new range sales, many of which it is felt would not have been made if there had been no way of disposing of the old ranges, without undue loss to the dealer. (*Canadian Gas Journal.*)

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SALESMAN-PHOTOGRAPHER

PICTURES of prospect's homes open willing doors for Jay Brannon, salesman and amateur photographer of Lone Star Gas Company, Fort Worth, Tex.

On his selling rounds, the photographer-salesman selects the houses he intends to photograph for his next day's journey. He takes the pictures either from his car or the curb, using a miniature camera. He develops the negatives in his garage dark room, attaches the prints to sales literature and then is ready for next day's delivery.

When he knocks on the door of the home he surprises the housewife with a handsome picture of her house. Women are at once interested and eager to see the pictures. Many housewives have never seen a picture of their house from the outside and most of them are pleased to know that the salesman has enough interest in their home to take a picture.

If the prospect is not at home, he leaves the picture, sales literature, and his company card.

'Few people have failed to telephone, if only to thank me for the picture,' Brannon says. 'Out of 30 such recent cases where no one was at home, 25 called me. That's better than 80%.' Jay Brannon makes early callbacks on customers and he gets frequent requests for reprints of the pictures.

Another sales promotion aid which he developed is a series of colour slides illustrating the use of a gas appliance. During a recent campaign on automatic clothes dryers, he prepared a sequence of shots showing the steps saved by use of the dryer.

The picture-taking system has been paying off. Last year's dollar volume sales showed Brannon the number two salesman of the company and in recent months he has come up to the top. (*Gas Age.*)

* * *

CALIFORNIA 'QUAKE'

FROM the gas industry's point of view, only minor damage was wrought by the tremendous earthquake which rocked California from the Golden Gate to the Mexican border for almost a full minute shortly before 5 a.m. on July 21. Although this quake has been estimated to have loosed the energy of 2,000 (Hiroshima) atomic bombs, it is notable that the force did no damage to Pacific Gas and Electric Company's 34 in. transmission line which runs near Tehachapi.

While Southern California Gas Company, which serves Tehachapi, maintains no office in that town, contact was made immediately with the company's office in Oildale, just outside of Bakersfield, and an emergency crew arrived at the isolated scene of the quake epicentre within three hours of the shock. Contact with the Oildale office was established by two-way radio. A service crew of nine men dispatched to the scene found it necessary to disconnect only about 40 services.

Due to a break in a supply line in the San Joaquin Valley, it was necessary for the gas company to curtail service, for approximately 24 hours, to the Monolith Portland Cement plant, a large industrial user located on the outskirts of Tehachapi. By the morning of July 22, full service was restored to this plant. In the Los Angeles area, very little damage was reported either to transmission or distribution facilities. Considering the intensity of the quake, this is a fact which speaks well for the durability of modern steel welded pipelines and distribution systems. (*American Gas Journal.*)

* * *

CAN'T TAKE IT WITH HIM

GEORGE S. WILSON, 82-year-old founder and owner of Haskell (Okla.) Gas Company, has turned the utility over to the city. Said Mr. Wilson: 'I have no one and nobody left and I can't take it with me.' His gift includes the Company's office building, which the city plans to use as a city hall.

The Company, valued at $20,000 on tax rolls, is unofficially estimated to be worth twice that amount. Mayor N. M. Williams said the city would purchase gas wholesale, then re-sell it. (*Gas Age.*)

COKE PRODUCTION PEAK

A NEW all-time peak in coke production in the United States was attained in 1951, according to data submitted by coke producers to the Bureau of Mines, United States Department of the Interior. A total of 79,330,702 net tons of coke, excluding breeze, was produced which represented a gain of 9% over the 1950 output and exceeded the previous maximum of 1948 by 4,468,774 tons.

Slot-type coke ovens operated at the second highest production rate on record —96.5% of capacity, compared with the all-time peak rate of 96.9% during 1942, the first year of World War II. Beehive coke production, the highest since 1943, declined slightly in the latter months of the year from the high rate in January and was 9% of the total production.

One of the major problems that confronted the coke industry in 1951 was providing sufficient coal carbonising capacity to support the double burden of the accelerated general industrial activity and the national defence programme. A total of 696 new slot-type coke ovens wth a designed annual coke capacity of 3,869,100 tons was completed while 359 ovens, having an annual coke capacity of 1,709,100 tons, were taken out of production. Most of the 359 ovens were shut down for rebuilding. (*Gas Age.*)

* * *

I.G.T. REFRESHER COURSES

THE Institute of Gas Technology, affiliated with Illinois Institute of Technology, Chicago, during July and August presented the first of its summer refresher courses in gas engineering. Twenty-three employees of gas utilities from coast to coast successfully completed the six weeks of intensive study and received 'Certificates of Accomplishment' in an informal graduation ceremony.

In accordance with the plan of the courses, which are designed to familiarise gas engineers with current problems and practices of the industry, current research, and up-to-date methods of measurement and computation, instruction was given at the graduate level. Fundamentals were reviewed by study of the derivation of all equations and formulæ currently used in the operations under discussion, to ensure that the registrant understood and accepted the limitations imposed by the short cuts employed in commercial practice. Accompanying this review, emphasis was placed on co-ordination of the various phases of each subject, rather than a complete illustration of each operation.

The courses were not a vacation for those who enrolled. The entire morning, plus an hour after lunch, were spent in classrooms; the remainder of the afternoon in laboratory work, and evenings in homework and in study preparing for the quiz which opened each school day.

Gas in France

--By ASHTON

A selection from the French Technical Press

THE annual report of Gaz de France for the year 1951 is summarised and commented upon in the *Journal des Usines à Gaz* for September. For the first time since nationalisation a small surplus was realised; it is no more than 9 mill. francs (say, £9,000 sterling), 'but none the less it constitutes a source of legitimate satisfaction to the personnel of the industry.' It marks a decisive stage in the rehabilitation of the finances of the industry and it was achieved under conditions which were not all favourable. The new tariffs of the several concessions came into force on January 1, 1951, but the effects did not materialise until some months later due to the different incidence of measuring the gas consumed and its billing at the new prices.

It is noted that in spite of the growing use of petroleum products and of outside sources of supply (natural gas, coke oven gas, etc.) the tonnage of coal processed by Gaz de France increased from index 116 in 1950 to 122 in 1951, the year 1946 being taken as 100. The quantity of coke delivered for sale showed a remarkable growth, the corresponding index increasing from 147 to 164. Sales of gas over all the undertakings increased by more than 4% mainly due to the development of industrial consumption. Progress in domestic consumption was only about 1% which, as M. Le Guellec, the President of the Association Technique, underlined at the recent annual congress, is the point at which propaganda and sales effort must be directed.

The situation of Gaz de France at December 31, 1951, presents a satisfactory picture with, in the words of the report, "annual accounts in balance for the first time without external assistance. . . . a balance cleared of past losses and showing a healthy situation. . . . a notable increase in sales both of gas and coke. . . . a productivity in very sensible progress. . . . the irritating question of extra-contractual charges, which threatened to poison relations with local public authorities, finally resolved by Parliament under honourable conditions. . . . a general convention, completing a financial agreement, concluded with Electricité de France in an atmosphere of equity and goodwill, in the best interests respectively of both national services.'

The prospects for 1952 are not so favourable. On the one hand allocations for the financing of distribution systems are less than the vital minimum to maintain service to the public. On the other hand gas tariffs, by reason of the freezing of prices, have been for the greater number of concessions crystallised at prices which are six months behind the general movement of costs. Reductions in prices have been more than balanced by reductions in prices of coke, tar, and other derivatives.

Two New Measuring Devices

M. B. Vdovenko, engineer-chemist at Nice gasworks, describes a device for a continuous control of oxide purification and another for the valuation of purifying materials, solutions of problems posed to the Research Department of Gaz de France.

The first problem is solved by automatically exposing a strip of the standard lead acetate paper in a controlled current of the gas to be tested for successive periods of 15 min. and to record the time of the exposure. The paper is passed through a gas-tight chamber 20 mm. wide at a speed of 20 mm. per 15 min. by means of a synchronous electric motor with suitable reduction gear. The paper is graduated in time units. The principal difficulty lay in the necessity to combine the smooth passage of the strip of paper through the chamber with the gas-tightness of the latter. It was resolved by plugging the entrance and exit with blocks of soft rubber between which the paper slides. The rubber blocks are made with rounded corners wrapped at the ingoing ends with sulphurised paper. The exposure chamber is of glass so that the paper can be seen during operation. The apparatus has been in trouble-free operation for two months, but some slight modifications and improvements are contemplated.

The second piece of apparatus (not to our mind quite so convincing) consists of a delicate recording balance registering the increase of weight of a small sample of purifying material when a gas of known H_2S content is passed through it.

Mechanical Producers

M. J. Russier, whose title we may translate as Chief Production Engineer at the Gasworks of Gennevilliers, contributes a sequel to his communication of 1946 to the Association Technique describing the installation of five 40 ton mechanical producers at Gennevilliers. Since then the installation has been doubled up to a total of 10 producers by the Cie. Gle de Construction de Fours. Improvements and developments are described and the article is illustrated by two very fine sectional drawings showing the designs of the first and second batches of producers. The imperfections of the first design and the objects to be attained by modifications are set out with the utmost candour in parallel columns of discussion. The producers are gasifying small coke, 10 × 20 mm. and 20 × 40 mm., from Woodall-Duckham vertical retorts and inclined chambers. The internal diameter of the producers is 3 m. With the smaller size of fuel the limit of capacity is 70 tonnes per day and with the larger 90 tonnes per day. The air/steam pressure below the grate does not exceed 400 mm. water gauge.

International Congress on Industrial Heating

The October issue of the French Journal carries a selected summary of the 231 communications presented to this Congress, held in Paris, September 29 to October 4, the first since the war of this 30 years old organisation. It is further summarised and commented upon in an Editorial. Held under the Presidency of M. E. Audibert with MM. H. Cassan and M. Dumas as joint secretaries, it was attended by delegates from all countries, including Russia. France herself was represented by, among others, MM. Ribaud, Biard, Nérot, and Delsol.

The congress was mainly concerned with applied physics and thermodynamics with theoretical studies of the reactions involved in combustion, in gasification, and in heat transmission, but these led up to papers on the employment and conditioning of fuels and to some valu-

able accounts of progress in carbonisation in Britain, Belgium, and Germany. It was seen in particular that in these countries, as in France, research has been directed to the improvement of coke quality by appropriate mixing and blending of coals and the admixture of secondary products. Three problems of interest to the gas industry were presented: Complete gasification of coals, cracking of petroleum oils for gas production, and the extension in Europe of the exploitation of natural methane and, on a smaller scale, that of firedamp. Further discoveries of natural gas in France were reported—an increase of 16% from 1950 to 1951—but interest chiefly centred in recent deposits revealed in Italy.

The determination and the interpretation of the combustion characteristics of fuels, the appreciation of the behaviour of coals on carbonisation, the suitability of oils for the carburreting of water gas, were among the many subjects raised and discussed, but perhaps it was the applications of heat in industry which excited the greatest interest. New processes in space heating, those with air under pressure or with radiant panels which promise to enable gas to face competition effectively, held the attention of hearers, with, finally, the use of infra-red heaters in the field of industrial drying. We should also select for mention the communication of MM. A. Schack and J. Fleurquin on the present state of development of the metallic (steel) recuperator. 'Thanks to the employment of radiant recuperators or with combined radiation and convection, it may be taken that industrial problems have been solved with re-heating up to about 800°C. with gas inlet temperatures up to about 1,500°C.'

C.E.R.C.H.A.R. in 1951

This string of letters (it must be a record!) stands for the Centre d'Etudes et Recherches des Charbonnages de France, which may be freely interpreted as the Research Station of the Coal Industry. The annual report just published describes a new programme of construction of physical and chemical laboratories, a complementary recruitment of personnel, and a re-organisation of the service.

By the end of December, 1951, the effective personnel comprised 292 persons attached to the station, of whom 50 are engineers and 104 other technicians. Investigations undertaken are arranged in four mains groups: Safety (explosives), silicosis, coal cleaning, and coking. The work under these headings is briefly outlined.

COMPANY NEWS

SIDNEY FLAVEL

Consolidated trading profit to July 31, after charging management remuneration, £209,101 (£173,921). Deduct depreciation, amortisation, bank and mortgage interest, etc., of £52,567 (£51,297), and tax £108,863 (£75,680). Balance of profits £47,671 (£46,944). Add tax adjustment £5,000 (nil). To general reserve £10,000 (£20,000), interim dividends on larger capital 5% (6¼%) £11,550 (£8,250), final dividend 7½% (8¾%) £17,325 (£11,025), undivided profit £46,520 (£32,724).

DE LA RUE

The directors of Thomas De La Rue & Co. have decided to make no interim payment on the capital of £926,000, as increased by 100% scrip bonus. They state that it is clear that profit for the current year to March 31, 1953, will be greatly reduced and they consider it improbable that any final dividend will be recommended. The Board's statement adds that the slight improvement in sales to which the chairman referred at the annual meeting in July was not maintained. For 1951-52 a final of 15% was paid on the above capital and an interim of 20% on £463,000.

According to a statement issued by the Chairman, Mr. B. C. Westall, the company as a whole was still trading at a profit for the first six months of the financial year—that is, up to September 30. Apparently every section of the industrial division—plastics, gas appliances, and stationery—has contributed to the deterioration and only the security side of the business has proceeded according to expectations. The statement is, however, completely devoid of figures of either profits or losses, so that the really important facts which shareholders need to know are missing.

FALK STADELMANN

Group trading profits and sundry income of Falk Stadelmann & Co., expanded from £572,541 to £662,419 in the year ended March 31, the dividend, as announced on November 4, being 15% for the sixth successive year. In order to sustain the substantial increase in turnover, which again broke all records, states Mr. H. Falk, chairman, correspondingly larger stocks have had to be carried. Group stocks figure at £1,870,004, against £1,401,730, which has necessitated a fluctuating bank overdraft, standing in the consolidated balance-sheet at £196,164 (£9,501).

CANNON (HOLDINGS)

When the directors of Cannon (Holdings), then known as Cannon Iron Foundries, doubled the interim dividend in respect of the 12 months to June 30 last they gave the customary warning that the decision did not necessarily imply an increase in the total distribution for the year. As it turns out, the warning was merely precautionary. The final dividend is maintained at 15% and the year's total accordingly is stepped up from 20 to 25%. A year ago, when reporting an 'extremely healthy' forward order book, the chairman foreshadowed further increases in the output of gas appliances as additional plant and machinery came into operation. Reflection of this is now found in the year's profits, which have advanced by £48,000 to £454,400, although taxation restricts the gain in net profits to not much more than £14,000. The net figure of £189,800 nevertheless shows a generous surplus over dividend requirements, the increased 25% payment on the ordinary shares being covered more than four and a-half times.

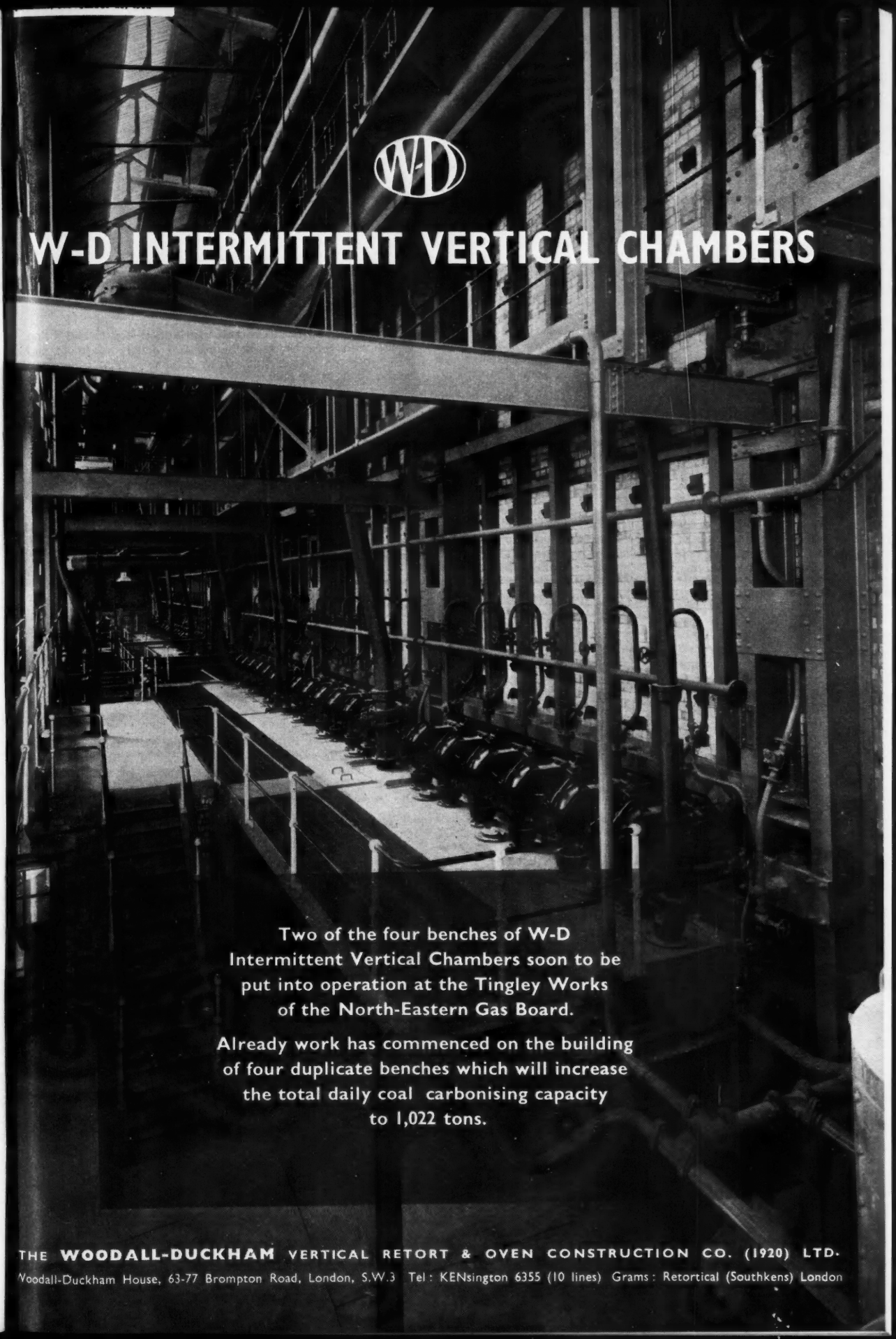
COCHRAN & CO., ANNAN

Addressing the shareholders at the 50th annual general meeting of Cochran & Co., Annan, Ltd., the Chairman (Mr. R. P. W. Adeane) said the trading profit at £221,737 (compared with £178,314) was the highest in the history of the company. But in spite of this large increase in the gross profit, the net profit, atfer taxation, was not much higher at £68,234, as against £65,334 last year. This year is the 75th year since the first Cochran Boiler was constructed. During the last three-quarters of a century it has steadily grown in popularity and with the improvement in steel supplies, which has already made itself felt, the chairman considers the outlook for the future to be good.

BRITISH OXYGEN

A rights issue to ordinary stockholders designed to raise approximately £3.75 mill. is announced by the British Oxygen Company. The Treasury has consented to the operation. Ordinary stockholders registered on October 31, are offered 1,873,315 new £1 ordinary shares at 40s. each in the proportion of three new shares for every £10 ordinary stock held. Applications may also be made for excess shares. The new shares will rank for any final dividend declared for the year to December 31 next. An intimation that additional finance might soon be required was given by the Board last June when it was proposed to increase the capital to £15 mill. by the creation of 5 mill. £1 shares.

With the 50% ordinary scrip bonus last June, total issued capital is £8,744,383 in £500,000 6½% cumulative preference stock, £1 mill. 5% cumulative second preference stock, £1 mill. 4% cumulative second preference stock and £6,244,383 ordinary stock.



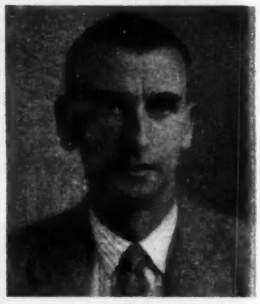
Two of the four benches of W-D Intermittent Vertical Chambers soon to be put into operation at the Tingley Works of the North-Eastern Gas Board.

Already work has commenced on the building of four duplicate benches which will increase the total daily coal carbonising capacity to 1,022 tons.

THE **WOODALL-DUCKHAM** VERTICAL RETORT & OVEN CONSTRUCTION CO. (1920) LTD.

Woodall-Duckham House, 63-77 Brompton Road, London, S.W.3 Tel: KENsington 6355 (10 lines) Grams: Retortical (Southkens) London

Distribution and Sales of Gas



By J. ANDERTON,
Distribution Superintendent, Great Yarmouth Group, Eastern Gas Board.

Presidential Address to the Eastern Junior Gas Association

INDUSTRIAL sales in the Great Yarmouth group are showing considerable increase, and success has been achieved in the light engineering industry, brewing, artificial silk, wireless components, nylon treatment, and many small and varied industrial processes. This load has not been gained without hard work, but we feel that the business we have obtained has made the effort well worth while, particularly when it is considered that this is almost wholly a residential area.

When it is considered that modern gas appliances, particularly cookers and fires, consume very much less gas than was the case years ago, any undertaking which can retain its domestic load may be said to be in a fairly satisfactory position. But consolidation of our position is not sufficient, and in the attempt to advance a great deal of attention has been directed to the use of gas in industry.

Throughout the country as a whole, it can be said that the domestic market is the most valuable one, since it is not so dependent upon the conditions of trade, and it is a field in which gas can be sold at a reasonable price and still meet competition. We must remember that something in the region of 65% to 70% of the gas sold in the country is used in the home. Thus the gas industry is a woman's industry, and our propaganda must be directed to make special appeal to the housewife.

The gas industry will need men—certainly many hundreds—who have an expansionist outlook and who are competent to assess sales potentials, determine sales targets, and then, in due time, make the sales. At present it is impossible to assess the gas sales potential in this country. No one knows how big the gas industry could or should be.

There are a few undertakings which have exploited their markets fully, by having house-to-house surveys of all existing domestic consumers and families in areas already served by gas or about to be served by gas, and I am convinced that this is a most effective method of selling appliances. In a house-to-house canvass which was undertaken just before the war, and covered 46,700 calls, we were able to sell 2,825 appliances, as distinct from ordinary sales. It is, however, essential that this work should be undertaken by trained personnel having a wide knowledge of gas appliances and able to give at least approximate estimates of installation and running costs on the spot.

The success of the sales and canvass campaign which followed the census is indicated by the following record of appliances sold, mainly on hire purchase:—

	Year before Census	Year after Census
Cookers	1,103	1,938
Boilers	793	738
Fires and radiators	347	591
Hot water appliances	11	1,269
	2,254	4,536

In the Great Yarmouth group we have found that small supplementary showrooms situated at strategic points are most valuable and many people who may be deterred from entering a large building will take an interest in a small conveniently situated showroom.

Further questions to be looked into are—How much gas is sold through the cooker? What are the chances of getting a better cooker into the house? What is the earliest possible replacement date? Extend these questions to water heaters, refrigerators, gas fires, gas pokers, and then you begin to collect basic information on which to form a sales plan.

Immediately after the war, the Great Yarmouth Gas Company recommenced hire purchase with very successful results, each member of the sales and distribution department being issued with data sheets including full details of prices and hire purchase terms, and when nationalisation came into operation in May, 1949, approximately 2,000 cookers had been sold.

In the Great Yarmouth group there are nine undertakings, and the figures below show the number of consumers and sales of appliances for the 12 months ended December 31, 1951.

Consumers	26,397
Cookers sold	1,352
Water heaters sold	359
Fires sold	225
Wash boilers sold	725
H.P. and cash value	£50,815

Mainlaying

Many papers in the past have given prominence to excavating and back-filling being let out on contract on the assumption that it is better and cheaper. Maybe it is because the land in this part of the country lends itself to good digging that the writer disagrees with this principle and prefers direct labour, one reason being that delivery of pipes is usually restricted to 50 per week, which is totally inadequate for mechanical digging or contractors' work of any kind. If our own labour is used several jobs can often be worked together to suit the delivery of pipes. Furthermore, the endless arguments about 'extras' are eliminated. Many of our mainlaying gangs still pride themselves that they can beat any contractor and I give below figures of cost involved in laying mains on Nos. 1 and 2 development of the Magdalen College Estate, Gorleston, including excavating, laying, testing, and back filling.

Magdalen College No. 1 Development	Medium pressure main	1,506 yards — 6 in.
	Low pressure main	628 yards — 6 in.
		2,720 yards — 4 in.
Magdalen College No. 2 Development	Medium pressure main	945 yards — 6 in.
	Low pressure main	1,050 yards — 6 in.
		3,605 yards — 4 in.
		9,954 yards

The average cost to lay the above was 7s. per yard.

Service Laying

In some parts of the country, compo services are laid in wooden troughs. This has certain advantages inasmuch as no difficulty is experienced with stopped services, and in a large undertaking with which the writer was connected this was standard practice, and he can bear witness to its efficiency. Generally speaking, however, steel tubes are the recognised practice.

The writer would personally like to see the adoption of copper tube for service pipes. Taking into consideration the advantages gained, it is felt that the additional expense would be well worth while.

Let us consider the advantages of copper tube. By using a bending machine, the number of bends used is reduced. Once a service is laid, providing it has the correct fall, no further expense will be involved in clearing internal corrosion, and, therefore, advantages to be gained are saving of labour

once the service has been laid and—most important—no further reinstatement charges for clearing services. Also, from experience gained, steel service pipes usually need relaying after having been cleared three or four times, whereas copper pipe is virtually permanent.

In the past there were fixed charges for carrying out reinstatement work. This has now been altered to a cost plus basis, and in some instances, where the roads are asphalt on concrete, it averages £2 15s. per sq. yd. Hence the reason for us to consider a system which will reduce our expenses and at the same time provide a better supply of gas by overcoming stopped services, thus my preference for copper services.

Internal Installation

In the Great Yarmouth group, copper pipe has come well to the fore in carrying out this work, and it has many advantages over other types of installation, such as neatness, saving labour as far as steel tubes are concerned, ease of handling, and no internal corrosion.

Houses of similar types have been carcassed with steel and copper tubes, and below are set out the comparative costs of labour and materials for running points to supply cooker, copper, and gas poker.

Copper	£	s.	d.	Steel	£	s.	d.
30 ft. — ¾ in tube ..	2	3	9	30 ft. — ¾ in. tube ..		15	8
6 ft. — ½ in. tube ..		6	3	6 ft. — ½ in. tube ..		2	6
2 — ¾ × ½ tees.. ..		7	7	2 — ¾ bends		2	2
1 — × ¾ No. 1 coupline		1	11	1 — ¾ connector ..		1	3
4 hours at 3s. 5d. ..		13	8	2 — ½ elbows		2	5½
				6 hours at 3s. 5d. ..	1	0	6
	£3	13	2		£2	4	6½

Despite the greater cost, we have succeeded in convincing many of our consumers that a copper installation is well worth while.

Although some progress has been made for public services to have a certain position in the footpath when laying supplies to housing estates, the author feels that there is still room for much improvement, and would like to see all services having their recognised positions in the footpaths, with the addition that ducts are made similar to those in schools and public buildings, covered by portable slabs which could be removed when faults or leakages occur, this obviating any recurring excavation.

It is not impossible for all the public services and the authorities to share the initial costs. If such an arrangement could be made much time would be saved in locating and repairing any of the services when the occasion arose, and in particular our own industry would benefit considerably in the saving of labour costs in cases of emergency. This is particularly worthy of attention when supplies to new housing estates are being arranged and one such arrangement which has come to my notice enabled a considerable saving in costs to be made.

Gas Supplies in Rural Areas

The difficulties of manufacturing gas in small country gasworks at an economic figure are well known. In many areas integration has proved the answer to this problem, but in the Great Yarmouth group we have to face the fact that the district is almost wholly agricultural, and if integration is adopted we should have to run mains through many miles of open country. The Board has therefore decided to experiment with unconventional methods of gas production and accordingly a Mallet type butane-air plant is being installed at Bungay, a town with a population of 3,530 and an annual consumption of nearly 11 mill. cu.ft.

From a distribution point of view this experiment raises several problems. In the first place the gas is heavier than air, having a specific gravity of 1.2, and the calorific value is 720 B.Th.U. It follows from this, that the delivery rates of gas at burners and orifices will differ substantially from that of normal town gas. Furthermore, any gas leak from mains and services will sink to the lowest point instead of rising.

This has meant that the entire system of mains and services has had to be thoroughly tested for leakage. All service pipes and meters in cellars have been removed and taken above ground, and in such cases as it is impracticable to move the service, it has been wrapped with 'Denso.' When it is considered that each main has been tested at six-yard intervals, it will be appreciated that there is a considerable amount of work involved. Should the butane-air plant eventually be moved to another station, this work will not be wasted, since it should reduce the unaccounted-for gas considerably. It has also been decided that all meters installed prior to vesting date should be changed, as it is considered probable that the diaphrams may be affected by the new gas. Since all burners and orifices will have to be modified or changed, we have undertaken a census of all gas appliances in the district even down to the humblest gas ring.

Foundations and buildings for the new plant are installed, and it is hoped that by giving a better and more consistent supply of gas we may increase our sales in this district and obtain the goodwill and interest of its inhabitants.

EFFICIENT BOILER FIRING

THE objective of the Combustion Engineering Association is the furtherance of industrial fuel efficiency, in the interests both of the nation and of the individual user. Its membership is drawn from firms and companies in general industry who are users of fuel, makers of industrial combustion appliances, fuel distributors, the National Coal Board, the Gas Council, and representatives of the oil and electrical industries.

In furtherance of the cause of fuel efficiency, the Association has produced a book entitled 'Firing Equipments and their Fuels: Section I, Shell Boilers fired by Solid Fuel,' which was presented at its recent Harrogate Conference on 'The Operation and Maintenance of Industrial Boiler Plant.' This book, introduced with a foreword by the Minister of Fuel and Power, sets forth in concise and tabular form the types of solid fuel which can be used to the best advantage with various types of mechanical equipment.

The wide range of interests represented in the Association has made possible the production of a textbook free from bias, with the sole object of making available to industry from an unrivalled amount of accumulated experience the facts necessary to enable plant operators to attain high efficiency and economy in coal consumption.

There are probably between 100,000 and 120,000 shell boilers installed in this country, including Lancashire and Economic types. In the aggregate they consume a substantial proportion of the total solid fuel raised. It is thus a matter of the highest national importance that this fuel should be used with the maximum possible efficiency. Both present users and those who contemplate the introduction of mechanical firing equipment will find this book of great service. In due course it is intended to issue further sections dealing with other types of plant and other forms of fuel.

The price of the book, obtainable from the offices of the Association at 6, Duke Street, St. James's, London, S.W.1, or from the Hon Secretary of the Northern Section of the Association at 9, Quebec Street, Leeds, 1, is 10s. post free.

A STATUTORY LIST of iron and steel companies has been prepared by the Iron and Steel Corporation of Great Britain in discharge of its obligation under Section 50 (2) of the Iron and Steel Act, 1949. The list contains the names and registered addresses of the companies in the Third Schedule to the Act, and of the wholly-owned subsidiaries and of the other subsidiaries, respectively, of the companies. The subsidiaries and the partnerships of two or more of the principal companies are also listed.

ASPECTS OF INDUSTRIAL GAS APPLICATION

By T. H. PARDOE, Assoc.Inst.Gas E., M.Inst.F.,
Area Industrial Gas Officer, South Western Gas Board.

In this paper presented to the South Western Section of the Institution of Gas Engineers at Taunton on October 8, the author reviewed the location and types of industry in the south west; gas consumptions and steps to be taken to meet load losses where they occur; some interesting industrial installations within the area; and the organisation of the area industrial gas office. A list of industries in the various sub-divisions indicated that the area is not by any means exclusively concerned with holidays and relaxation, but there is no danger that the area will become industrialised in the sense that some other areas are.

A STUDY of the development of the industrial gas load in the south west, and a comparison of consumptions taking 1950 against 1951, shows that in some cases a decrease has been experienced. In one sub-division this has been due to a large consumer moving his plant to another part of the country, but in the main it has been due to the steady increase in the price of gas which has taken place since vesting date. The fact that it has taken place since vesting date has nothing whatever to do with nationalisation, but is due to increases in the cost of coal, labour, and the higher capital charges which have to be made for which interest and sinking funds must be found.

On some processes there is a limit to which industrialists can go in the cost of gas per therm, and in some cases these limits have been reached with the result that oil and coke are replacing gas-fired equipment. New oil refineries are being built in various parts of the country which will shortly have large quantities of oil available, and when this is eventually placed on the market the oil competition will greatly increase.

Threat to Gas Utilisation

What steps can be taken to deal with this threat to gas utilisation? The following I think are the only lines on which this problem can be faced: (1) By seeing that every bit of plant we install is up-to-date in design and efficiency; (2) make sure that it is equipped wherever possible with the latest thing in automatic temperature, pressure, or time control; (3) where the load is a continuous one or where its size or seasonal conditions merit special consideration, then see that the gas price is the right one; (4) by being frank with our consumers, and in the event of our having to lose one section of the load to oil or any other fuel let us see that the remaining load is carefully nursed, and not take the view that we are on the way out.

Let us gain for ourselves a reputation, not for high pressure sales, but of being honest engineers who know our job, are abreast with the latest developments, and whose word can be relied on.

We should review our markets which can be divided into two groups: (a) Consumers in markets now using fuels with which we can compete on our present tariffs, and (b) potential consumers brought into being by the introduction of new gas-fired equipment and special tariffs. The former are our 'bread and butter' jobs, but the latter are often unaware of the existence of modern gas-fired equipment designed for their special needs.

Regular Calls

Industrial consumers should be regularly called on, preferably by the same engineer or representative so that he not only forms a business friendship with the consumer, but possibly a social one too. This personal contact with managing directors down to the shop foremen is vital if we are to be successful in increasing our business and is as important as having a sound engineering knowledge of the job. Consumers should be sent any cuttings of technical importance which we may come across and which might be of interest to them, and we should keep them fully posted on developments in gas utilisation as applied to their particular process. This not only builds up interest but goodwill, which is invaluable.

Where the irrevocable fact exists that the consumer is changing a section of plant to oil, let us consider the adoption of a combined oil/gas burner. It is often the case when starting up oil fired plant that a considerable amount of smoke is evolved, but if the plant is given an initial warming up with town gas then oil can be switched on without causing smoke, providing reasonable atomisation has taken place. Further, these burners can be used to burn oil and gas together, and it often happens that better combustion can be achieved when using the two simultaneously than when using oil alone, and operators are quick to seize the opportunity to choose the most trouble free way of operating the plant.

It has already been emphasised that all equipment installed should be of the latest design. In the high and medium temperature field much can be done to increase efficiencies by the use of regenerators or recuperators for heating the air supply. When gas is burnt at 1,100°C., approximately one-half of its heat is used in raising the air for combustion up to the furnace temperature. Physical difficulties are involved, but difficulties are made to be overcome by steady perseverance and ingenuity.

Unfortunately, a lot of existing equipment is not working at the highest efficiencies, and it is this equipment which is vulnerable to competition from other fuels. Due to the high capital cost of plant today we have got to live with obsolete equipment for a number of years, but automatic control can do a great deal in the way of improving efficiencies.

Seeking New Loads

In seeking new loads let us select whenever possible those trades or processes in which we can use gas to advantage; in particular, infra red drying, flame hardening, and the direct firing of those processes which previously used indirect firing. Further, in considering these loads let us remember that a number of smaller loads are to be preferred to one or two larger ones, in that they not only have a greater variety of trades less liable to trade fluctuations, but they also keep the price of gas in the high bracket groups.

Increased throughputs mean lower costs, but if our internal costs continue to rise then there is trouble ahead, and it is here I would ask our production men to do everything in their power to give us lower cost gas.

The most interesting industrial installations in the south west are those in the pottery industry. The pottery produced in this area, particularly in Devon and Cornwall, is red body ware; we have no large town gas-fired kilns in the sense that the Staffordshire potteries have, due to the relatively high cost of gas. There are, however, a large number of commercial potters using intermittent batch type kilns.

The clay in its prepared state contains approximately 28%

moisture. In the moist state the clay adheres to the mould so that it is partially dried until about 18% of the moisture is removed, the shrinkage and changed state allowing the article to be easily removed from the mould. In this state the ware is said to be leather hard or semi green, and colour is applied by dipping.

Before firing, the products have to be further dried and the moisture content reduced to approximately 5% in order to minimise the possibility of cracking or distortion during the firing, and this is done by either leaving the ware in a dry atmosphere for a long period, or placing it in a drying cabinet for a shorter period according to the ware, the temperature being maintained at 120°F. Sometimes a combination of both methods is used.

A Simple Drying Arrangement

For this purpose we have evolved the use of a very simple drying room or cabinet arrangement which has been successful in many of the small potteries in the Torquay district. It consists of a 2 in. by 2 in. timber frame to which are secured asbestos millboard sheets. Fig. 1 shows a typical drying room constructed for this purpose. It is fired by means of bar burners fitted with luminous jets. The temperature control is simple, consisting of a low temperature thermostat and relay valve; permanent pilots are fitted.

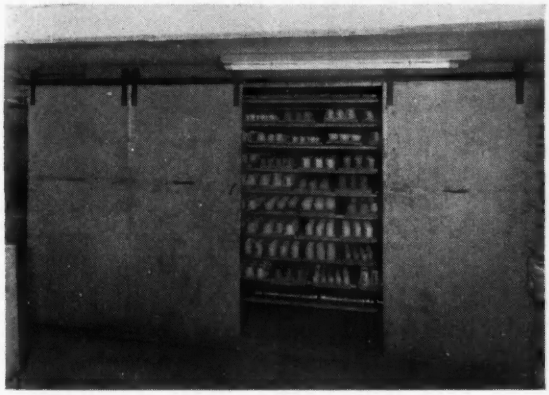


FIG. 1

The load from this type of room, the one referred to being 10 ft. 8 in. long, 5 ft. front to back and 7 ft. 4 in. high, is 180 cu.ft. per hour, which is often used 150 hours per week. The amount of service and attention needed is practically nil, so that once installed profits are not wasted on excessive maintenance. After the ware has been sufficiently dried it is removed for 'fettling' during which operation all blemishes are removed and faulty pieces weeded out.

The next process is the 'biscuit' firing, the ware being loaded into a kiln at a low temperature which is gradually raised over a period until a temperature of 960°C. or over is reached, dependent on the type of clay, after which the kiln is allowed to cool until the products can be handled for removal.

The biscuit ware is then dipped in a glaze solution which is again fired to produce the smooth glossy surface found on pottery. It seals off the pores of the biscuit ware which is advantageous from the health, cleanliness, and durability points of view. Usual firing temperatures are 1,010° to 1,080°C.

Enamel Ware

The decoration of earthenware pottery is not carried out to the same degree as with china clay pottery, and in the event of this happening the glost ware is decorated with coloured designs and must again be fired to secure these on the surface of the glaze. Usual firing temperatures are 800° to 850°C. For biscuit and glost ware we have installed a direct fired kiln. An example of this is shown in Fig. 2 by courtesy of the Sandygate Pottery.

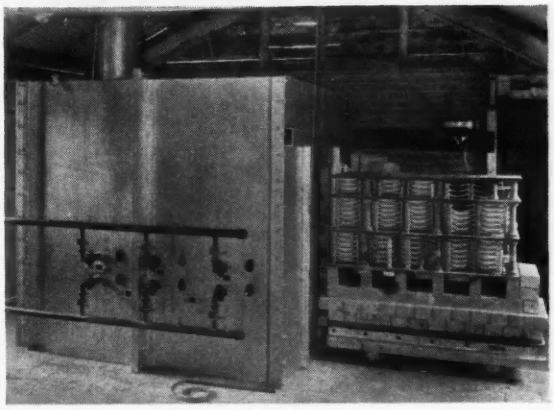


FIG. 2

This is a bogie hearth kiln manufactured by Industrial Furnaces, Kings Winford, in which for convenience the work is loaded on the bogie outside the kiln and pushed forward when loaded to capacity. One big advantage of open firing is that it has about 25% less consumption than when indirect firing is used. With intermittent kilns the firing and cooling curves are much shorter.

A further advantage is that there is no muffle to heat up and cool down, but with direct firing care should be taken to see that attempts are not made to run with too high CO_2 content. On the pottery in question we have found that about 4% to 6% CO_2 gives the best results; attempts to go higher than this have caused reduction of the ware. With intermittent kilns there is more need for exact uniformity of temperature than with the tunnel kiln. With the continuous type the ware has to pass through each zone so that it follows that all ware is invariably subject to the same temperature.

With the former type the ware is stationary and if there is any great difference in temperature this will be reflected in the colour; consequently it is exceedingly difficult to produce a set of matched ware. I have seen tea services withdrawn from an intermittent kiln in which one half of the set was very light chocolate in colour, while the other was deep cocoa, the result of non-uniformity of temperatures. It is often found, too, that a relatively cool zone exists near the door. In the case of the Sandygate Pottery this has been overcome by fitting a burner in the door itself in conjunction with a radiant panel, and this has proved satisfactory. For the firing of biscuit and glost ware, I have no hesitation in recommending direct firing by town gas.

Foundry Processes

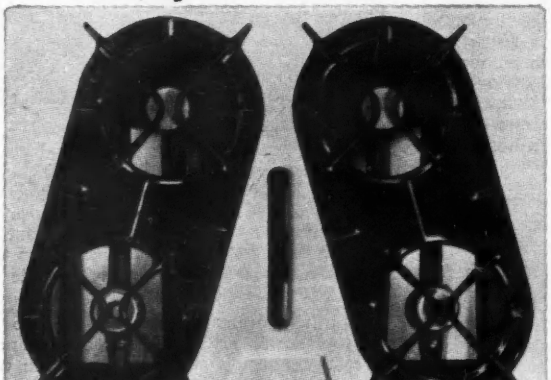
Despite the rural nature of the area there are a considerable number of foundries which present an outlet for increased gas consumption, particularly on: Ladle and shank drying, mould and core drying stoves, blacking dryer, and cupola lighting torches.

The drying of shanks is a relatively simple problem and for this purpose we have developed what is practically a standard design. It is essentially a steel frame table arranged at a convenient height, the top of which is built in with firebrick or alternatively poured in cement fondu. Holes are left in the table to accommodate burners, which in this case are Eddy-Ray burners, employing air at 8 in. W.G. Running radially from each corner of the burner hole are cast iron flats on which rest the shank to be dried. The tops of these flats are 1 in. above the brickwork or cement to ensure the escape of the products of combustion from the drying shank.

(*Continued on p. 511*)

An outstanding advance in ga

First a hotplate



of ideal dimensions with plenty space—24″ wide x 19″ deep—ha four boiling burners of ample capac each with a Fine-control tap with fi simmering position, and complete a large-sized grill.

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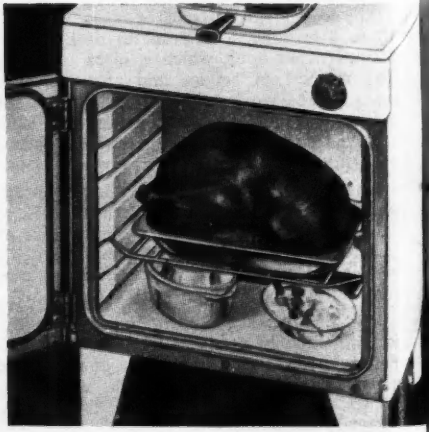

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cooker to be fitted flush to
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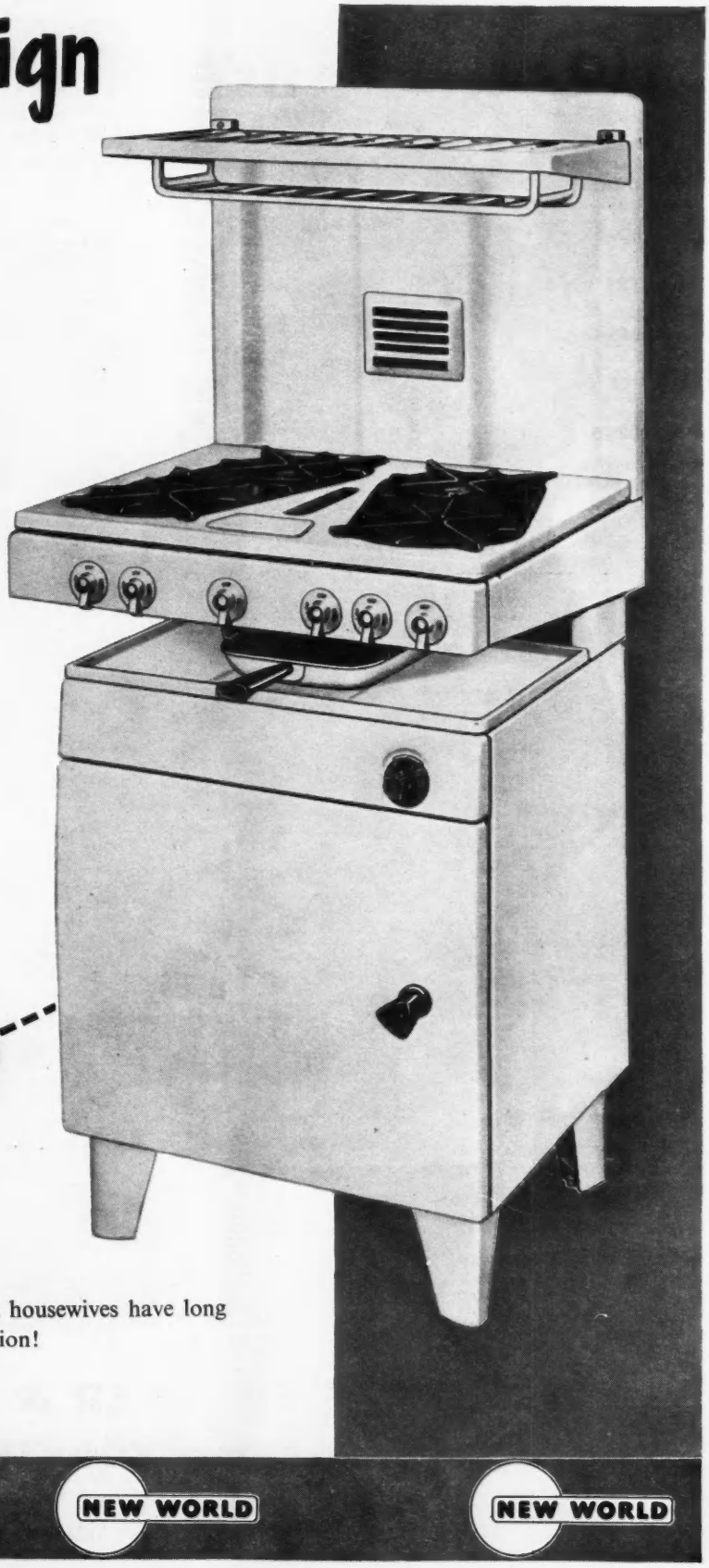

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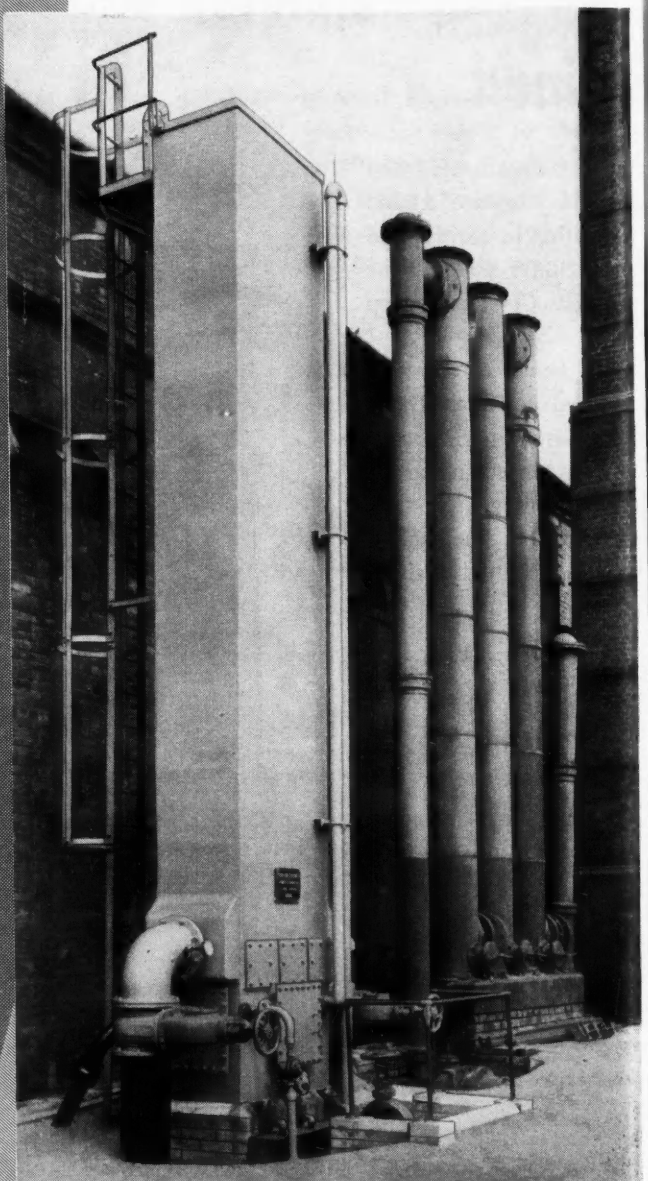

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B.W.

The arrangement is simple to make and assemble, and shanks can be dried rapidly to practically any temperature up to 800°C. With the greater use of cast alloys metal pouring temperature is very critical and it becomes more necessary than ever to have shanks at a really high temperature so as to reduce chilling of the metal to a minimum.

Ladles, however, are an entirely different problem varying as they do from 100 tons capacity down to the more popular size of three tons. As 100 tons ladles are confined to very large steel works and foundries of which there are none in this area, I shall content myself with discussing ladle heaters of the latter size. For this purpose the Board has, in conjunction with the Thermic Equipment & Engineering Co., Preston, developed a new type of ladle heater and this is shown in Fig. 3.

The chief merit of this heater is that the radial movement of the firing tube enables an overhead crane to move the ladle freely into its drying position. Since this was put on the market, however, further developments have taken place employing a concentrated combustion burner.

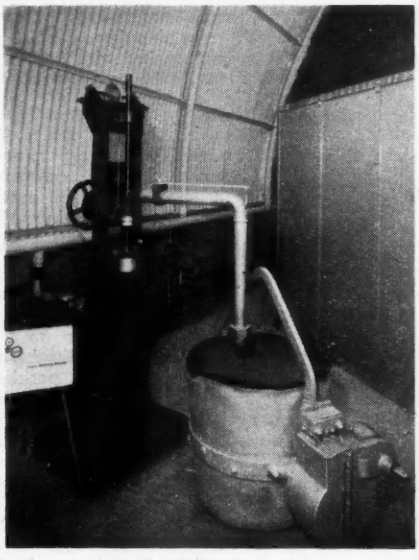


FIG. 3.

In tests on the ladle heater the drying time was 40 min. compared with 30 min. when employing the C.C. burner, and the gas consumption was 450 cu.ft. for the former and 140 cu.ft. for the latter. Further advantages of this dryer are that it rotates and can be used not only for ladles but for the drying of shanks too.

The gas load to be derived from mould and core drying stoves is a very attractive one, and particularly so in that a load of moulds is generally made up during the day and placed in the stoves at 5 p.m. and left over night to dry. It does happen, however, that a works will only have one mould drying stove so that although the load factor is excellent, the stoves only being used at night, the total gas consumption may not exceed 1 mill. cu.ft. per quarter. Because of this low quarterly consumption, and despite the favourable load factor, the cost under our existing tariffs is high. Efforts have been made, however, to meet this class of load and the new industrial tariff will go a long way, not only to retain this type of load, but also to obtain new business.

Despite differences in prices, a lot of mould drying is done by town gas. It is preferable when using towns gas that recirculation should be adopted. Recirculation can be arranged on a conversion job, and a particular feature is the elimination of the normal fan casing and the building up of a housing in refractory concrete.

The drying of cores calls for better temperature control in that the time cycle is shorter and it is essentially a job for town gas. Invariably the drying of cores is done during the day as opposed to the moulds which are generally dried at night.

The design of core stoves is now a standard job, either as batch type, vertical continuous or horizontal continuous, depending entirely upon the layout of the shop. After the cores have been dried these are generally blacked with a mixture of plumbago—water and core gum, and passed through a continuous dryer employing infra-red panels.

Galvanising

An interesting development in the wire industry is the use of a galvanising bath using recirculation, such has been installed at the works of the Somerset Wire Co., Bridgwater, by the Incandescent Heat Co., Ltd., of Birmingham. This bath has internal dimensions of 10 ft. long by 3 ft. 6 in. wide by 3 ft. 6 in. deep; Figs. 4 and 5 show the general arrangement of this installation.

The system of firing employed is such that spot heating is completely eliminated and the minimum temperature lead is employed relative to the working temperature of the galvanising bath. The gas is burnt in the heater battery or combustion chamber which is completely separate from the bath, but connected thereto by insulated flues.

A normal low pressure fan blast type burner is employed, this burner being suitable for operation off towns gas at normal mains pressure of 2 to 3 in. W.G. with air as supplied by a constant speed blowing fan at a pressure of 16 to 18 in. W.G.

Products of combustion from the heater battery are drawn at high speed around the sides and ends of the galvanising bath, the initial flow taking place around the upper portion while the return flow is around the lower portion of the bath.

The spent gases then return to the heater battery to be re-heated to the necessary controlled temperature before being re-circulated again. The high velocity circulation of the hot gases is achieved by a special type of motor driven fan. This fan being fitted with a heat resisting steel impellor mounted on an alloy shaft, the shaft being water cooled and also mounted in water cooled bearings.

Venting of the waste gases from the system takes place immediately after the circulating fan, and provision is also made for dilution of the hot gases by means of cold air should this ever become necessary. The whole of the bath is under strict temperature control. It is designed to handle 20 wires simultaneously and when running 10 gauge wire the output is approximately 650 lb. per hour, and the fuel consumption 1,000 cu.ft. per hour.

Bread Baking

Bread baking ovens are now such a standard piece of work and consumptions with given throughputs can be very specifically stated that I do not propose to enlarge on the subject. I would, however, like to describe a small plant which has been installed in connection with the storage of bread.

There is a gradual tendency to reduce night baking and it therefore becomes necessary to do more baking in the day and store the loads over night. The storage room should be maintained at about 85°F. and should carry a high humidity. This not only ensures that the bread does not lose weight, due to loss of moisture, but also ensures that when it leaves the storage room next morning it is to all intents and purposes newly baked.

An air heater and humidifying unit were installed for this purpose, the inlet and outlet ducts from the unit being suitably connected to the storage room.

The plant was very successful from the word 'go' with the exception of the fan, which is of the Aerofoil type. This

gave continuous trouble under the high humidity conditions and it is being changed to the conventional-impellor type. The plant is fully automatic, while the humidity conditions can be varied at will.

A new development in heat treatment is a new type of rotating gas fired flux bath furnace manufactured by the Thermic Equipment & Engineering Co., Ltd., of Preston. With flux baths of the fixed type uniform heating of the pot has always been difficult and the life of the pot problematical.

This new design has been developed specially to provide uniform heating all round the pot and to give maximum life. It is claimed that the pot is subject to a uniform heat input from the moment of lighting up.

Lithographic Printing and Drying Oven

The firm of Rheem Lysaght, of Bristol, has recently installed what is probably one of the largest lithographic printing and drying ovens in the country. The ordinary drums and pails in general use in industry are spray painted and will often have a stencilled sign to indicate their contents and place of origin, or alternatively, have a label pasted on.

One of the main objects, therefore, for the installation of this plant is the production of lithographed drums and pails to perform an important customer-relations job, the thought being that customers are bound to be favourably impressed and more strongly sold on a product if it comes to them in an attractive container.

A further reason is that lithographed drums function as a continuous, colourful advertising medium, and as they are moved about from one destination to another they are seen by many people. The cost of lithographing details of any particular design on the body of a drum is about 1s. per colour more than the cost of a spray painted drum, but the manufacturers feel that this is money well spent because when the drum is in circulation it has real poster advertising value. The important feature is that all the printing is done on flat sheets and the drums and pails are fabricated afterwards.

The decorating of sheets for containers and drums is done in approximately the same manner which has been followed for years in the decoration of pails and grease drums. The equipment and handling represent the real changes.

The drum and pail sheets that are to be coated in one colour are run through the coating machine, picked up by wickets on a chain-belt conveyor and passed through the baking oven, which is arranged for direct gas firing and has a heated section 170 ft. long by 11 ft. high, the overall width of the main chamber being approximately 8 ft., and following the oven section is a cooling section approximately 43 ft. long.

Oven Flexibility

This oven is flexible to the *n*th degree, control ducts and chamber being so arranged that the gases from the hot zone can be transferred to a cooling zone, etc. Six combustion chambers are mounted on the roof of the casing.

The two front zones are fitted with large capacity circulating fans, while the remaining four are provided with one circulating fan per combustion chamber, each zone being provided with its own thermostat control system and each combustion chamber provided with flame failure control and spark ignition.

In the original design trouble was experienced due to the carrier plates being relatively cool when they entered the oven which resulted in unequal drying of the coated sheets. To prevent such a condition occurring on the plant under review, bleed connections are taken from the main circulating system in the bottom return section of the oven; this pre-heats the carriers or wickets before they receive the wet coated sheets.

The following details relating to gas consumption give an idea of its size:—

At	250°F.	the	gas	consumption	is	15,200	cu.ft. per hour.
„	300°F.	„	„	„	„	19,150	„ „ „
„	350°F.	„	„	„	„	23,200	„ „ „
„	400°F.	„	„	„	„	27,200	„ „ „
„	450°F.	„	„	„	„	30,500	„ „ „

This oven has been designed to handle a maximum sheet size 72 in. long, the maximum width of sheet which can be accommodated in the conveyor being 45 in., and the maximum weight of sheet for which the mechanical gear has been designed is 45 lb., and for feeds up to 75 sheets per minute (4,500 sheets per hour).

Each sheet has a 20 min. travel through the oven and when the wickets are lowered some 20 ft. from the discharging end, they are picked up by a belt-conveyor, coated face down and moved to an automatic unloader and stacker where the sheets are stacked on pallets for removal to the production line or storage.

If it is required to decorate sheets with more than one colour these are first run through the coater and oven, during which they receive their prime or base coat. At the end of the oven there is a star wheel, lowered when not in use, but raised when needed, which turns the sheet over so when it gets to the stacker the sheets are stacked with the base coating face up instead of down so as to be ready to run through the press for their succeeding colours.

To feed the printing press with sheets, a Dexter feeder is employed. Automatically operated suction cups pick up one sheet at a time and feed it on to the belt conveyor which carries it forward to the press. From this point onwards the plant is a real example of engineering ingenuity and design.

The sheets now printed are rolled into shape, seams welded, tops and bottoms fixed in and are finally sent forward for test. Even the test bench is an interesting example of engineering in itself. Here the drums move in an upright position to the mechanism of the tester, which by means of a reciprocating shuttle that moves back and forth in the base of the tester moves the drums into and out of test position. The pressure platen above automatically descends, seals the drum and builds up air pressure within it. A small seam of water mixed with a soap testing solution is sprayed the entire length of the seam and at the chimes. Air bubbles indicate a leak. A knee button automatically discharges the drum to a gravity conveyor and the shuttle moves in the next drum. Rejected drums are manually discharged through the rear of the testing unit for repair. Some of the ovens were installed by the Stordy Engineering Co., Ltd., Wolverhampton, and others by Controlled Heat and Air, Ltd., Smethwick.

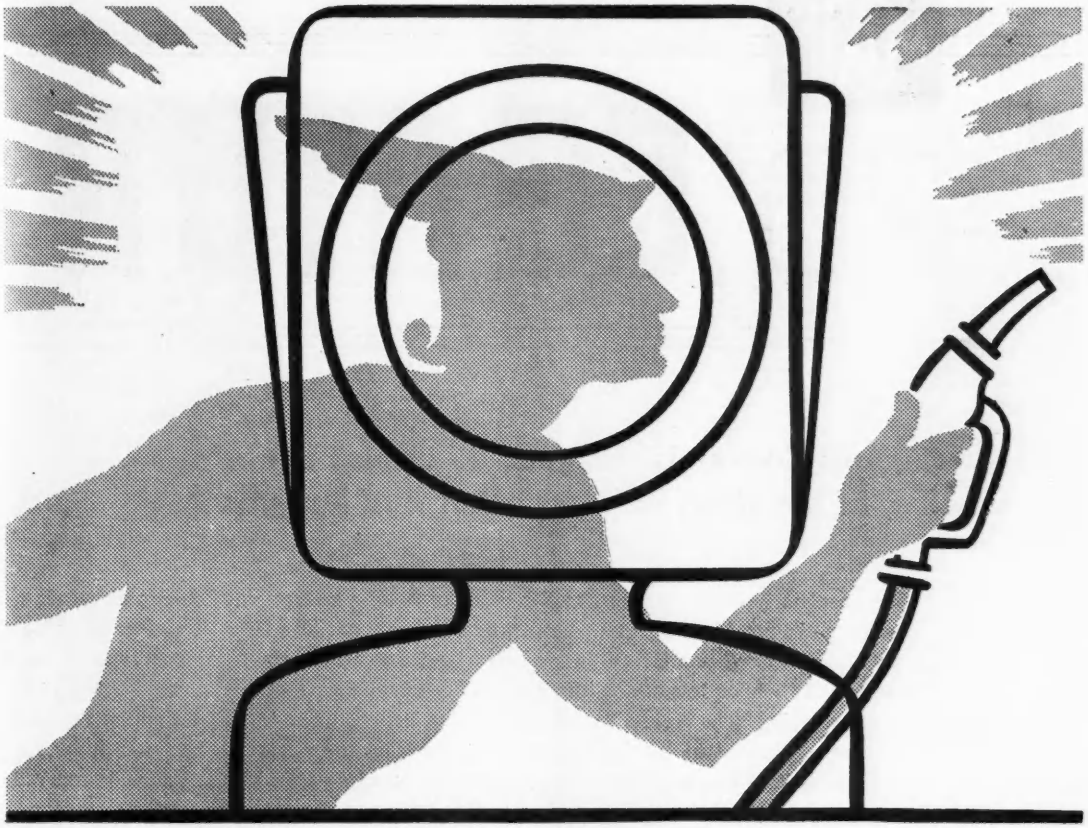
The normal gas consumption of these ovens is 1,000, 1,500 and 3,500 cu.ft. per hour respectively.

DISCUSSION

The Chairman of the Section **(Mr. J. W. Denton)** said that the one section of the paper dealing with the structure and functions of the area industrial gas department might well have formed the subject for a whole afternoon's discussion, but he asked members to confine their remarks to the technical aspects of the paper as far as possible. Personally he questioned the desirability of assisting oil by the use of gas-oil burners. It seemed to him a dangerous thing to assist a competitor to do something which they themselves could do satisfactorily.

Mr. C. R. Ingham (Sub-Divisional Manager, Bristol) disagreed with Mr. Pardoe's suggestions concerning the functions of the industrial gas department. They might suit other parts of the area, but he hoped they would not be applied to Bristol, who would rather be left out of such a plan. The Chairman had queried the wisdom of co-operating with competitors, but he did not think, in general, they would gain anything by withholding such assistance as they could give, whether it helped their competitors or not. He heartily agreed with Mr. Pardoe's remark that a lot of small industrial loads were preferable to a few very big ones.

(Concluded on page 521)



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No chassis is used in its construction. Great strength with minimum weight have been achieved by the use of large sheet steel panels with deep flanges, bolted together.

HOTPLATE.—The cast iron pan supports are interchangeable right to left and back to front. The burners, cast in tandem pairs, fit right or left. The burner support is reversible. Injectors are recessed behind the tap shield. A pressure-testing point is provided on the gas rail.

OVEN.—The side casing can be removed without disturbing the lighter connection. The burner, positioned at the back, is attached to a shield and is thus easily taken out and replaced. The thermostat rod is housed in the flue. Levelling screws are provided at the four corners of the base.

The Cooker of the Century

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by means of a flash ignition tube from the lighting hole to the burner.

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COMBINED OPERATIONS IN GAS PRODUCTION

By W. S. HUBBARD, A.M.C.T., M.I.Mech.E., M.Inst.Gas E.,
Production Engineer, Liverpool Group,
and
S. ASHWORTH, M.Inst.Gas E., M.Inst.F.,
Production Engineer, Wirral Group, North Western Gas Board.

From a paper at the Annual Conference of the North Western Gas Board, Blackpool, October, 1952

THE advent of nationalisation gave the gas industry the opportunity to eliminate existing boundaries between areas of supply and to replace them by demarcations determined solely by considerations of best administration and plant operation. The implications of the Gas Act made it necessary for each of the 12 boards which the Government established to organise themselves in such a way that they would ultimately meet the intentions of the Act. The general principle has been to sub-divide each area into groups or divisions, and in the North Western Gas Board this resulted in the formation of the groups of which it now consists.

This grouping of undertakings provided the opportunity for obtaining improved efficiencies in gas production, and in most of the groups some form of mains interlinkage has been laid down which enables better use to be made of available gas-making plant and the operation of the more efficient units at higher load factors. Results already obtained by integration within groups indicate the necessity for an investigation of the possible benefits of some form of inter-group integration.

In the north western area industry is heavily concentrated in a rectangular zone running from Liverpool in the west to Manchester in the east. The fact that it was possible some years ago to travel from Stockport to Liverpool by tramcar indicates the continuity of this industrial belt. The gas production units are, in general, close together, and the formation of a complete grid across the zone is already envisaged by the Board.

From the point of view of co-ordinated manufacture, the north western area divides naturally into a small number of sections each comprising several groups. One of these possible sections might consist of the Liverpool, Wirral, and South Lancashire groups, and the object of this paper is to consider the possibilities of 'combined operations' in these three groups, and the possible effects of such operations as exemplifying the problems and benefits of inter-group linkage from a production aspect.

General Survey of the Groups

The groups cover an area of some 625 sq. miles, and with 541,000 customers account for over one-third of the gas demand in the north western area.

There are no fewer than 17 works, an extremely large number when considered in the light of modern conception of gas manufacture. The quantity of gas involved could have been produced in four or five large units situated in strategic positions, but it should not be overlooked that, under present-day conditions involving high capital costs, any attempt to concentrate manufacture in this way would not, in the authors' opinion, reduce appreciably the cost of manufacture.

The Liverpool group, which at present supplies 53% of the total output of the three groups, is already completely integrated, and interlinkage is proceeding within the other two groups. Transfer of gas already takes place between the South Lancashire and Liverpool groups, and an 18-in. main through the Mersey Tunnel, to be completed about 1954, will link Liverpool with the Wirral group.

The South Lancashire area is highly industrialised, industrial gas in this group being 44% of its output, the corresponding figures for Liverpool and Wirral being 19% and 13% respectively. There are, of course, coalfields in the area, mainly in that of the South Lancashire group. Rail facilities are, in general, quite good, and first-class docking facilities are available on Merseyside.

The gas production in a truly base load works is maintained at a constant maximum at all times, no reduction in output being made during periods of low demand. Weekend, holiday, and peak load variations are not allowed to interfere with the operation of the works. A works operating in this manner must be part of an integrated system comprising several works and holder stations physically interlinked and with adequate distribution plant for the transfer of gas, peak demands being met by one or two stations equipped with peak load plant.

Continuous Verticals for Base Load

Continuous vertical retort installations are ideally suited for working on base load, and an illustration of this type of operation may be obtained from the experience gained at the Athol Street works of the Liverpool group. This works has been operating in this manner for the past five or six years, and the cost of the gas into holder during 1951-52 was 5.47d. per therm, with coal at 70s. 9d. delivered at works. The carbonising plant consists of two benches of 30 62-in. W-D retorts with step-grate producers and a dilution producer. The coals carbonised are variable, but average about 80% Yorkshire and 20% Lancashire.

During the period under review, the overall thermal efficiency has never been lower than 80% and is usually between 82% and 83%. Producer fuel consumption averages 8.8%-9.2% (dry coke/wet coal). It should be noted that these figures have been obtained with retort benches that have been in continuous operation for 5½ and 4½ years respectively. There are no solid fuel fired boilers in operation, all steam being provided by waste heat boilers.

The effect of the steady conditions on extending the life of the settings is considerable. An accepted figure of 2,500 tons of coal carbonised per 10 in. retort major axis from rebuild to rebuild has been understood. Experience at Athol Street shows that this figure has already been exceeded and is likely to be almost doubled. The excellent condition of the retorts is due, largely, to the fact that heat racking of the refractory material is reduced by the continuous full output working and the consequent steady rhythmic conditions.

The final control of calorific value on the works is obtained by admission of externally made producer gas, and no alternations to carbonising plant conditions are necessary to compensate for variations in coal quality. On such a works, modifications in plant technique can be closely studied and reliable conclusions obtained. The standard of technical control is extremely high, as a slight fall in thermal yield or output or a slight increase in fuel consumption is a matter of immediate and pressing concern. Employees' duties are regular, and over an extended period there is a minimum interference with their weekly pay. Maintenance work has become mere routine, and the process of purification is studied with greater confidence, the work being carried out to more uniform conditions.

In addition to the interlinkage already approved, an exten-

sion of the 24-in. main along the East Lancashire Road from Liverpool into the South Lancashire group, an 18-in. link between Widnes and Garston, and, when possible, a main across the Mersey to Runcorn are suggested.

All the carbonising plants in the Wirral group consist of continuous vertical retort installations. The South Lancashire group has a large proportion of continuous vertical retort installations together with some horizontal retorts at Wiagn and Widnes, while the Liverpool group has continuous vertical retorts, horizontal retorts, and a large number of C.W.G. plants.

The continuous vertical retort plants are highly suitable for base load operation, and the main feature, from a production point of view, would be the full base load working of these plants with the eventual closing down of the horizontal units. There is already almost enough vertical plant, backed by C.W.G. sets, to make this possible, and sufficient plant is on order amply to cover likely increases in gas sales. In such a change it is realised that additional quantities of suitable coals for carbonisation in vertical retorts would be required, but it is known that certain of the coals now used in horizontal retorts in the three groups are suitable and that the additional tonnage could be made available.

The low cost per therm of vertical gas and blue water gas would result in a material reduction in the cost of manufacture. Furthermore, full base load operation of the carbonising plant in the South Lancashire group, where coal transport costs are at their lowest, would appreciably reduce the average cost of coal to the three groups. The extra distributing costs appear to be of a much lower order, and although a coke problem arises it is not considered insurmountable. Both these points are dealt with at greater length later in the paper.

Interlinkage itself does no more than provide a means of efficient operation and, to make full use of it, a high degree of co-operation will be required between the three groups to develop methods of combined working. The three groups would be considered as a whole in deciding on the allocation of new plant and the closing of obsolete plant. At the operational level it would be essential to arrange annual repairs and maintenance programmes so that the correct amount of plant was available to meet forecasted gas demand.

Effect on 1951-52 Working

(a) *Costs of Manufacture*

In order to assess the possible effects of these methods on the operations of the three groups, a detailed examination has been made of the position in the financial year 1951-52.

Assuming full interlinkage and the base loading of the vertical plant producing high C.V. gas which would be diluted externally with blue water gas or, where this was not practicable, with producer gas, sufficient gas-making capacity was available to meet the demand throughout the year with only one bench of horizontals in operation. It was therefore possible to re-work the cost of manufacture statements assuming these conditions, and to examine the resulting position with regard to raw materials, by-products, distribution, and storage.

Estimated manufacturing costs under base load conditions and the actual costs last year were compared. The same costs of raw materials and average prices obtained for by-products were assumed. By the proposed method of operation the net expenditure (carbonising) is reduced by £226,000, equivalent to 0.39d. per therm. This is due mainly to making maximum use of the most efficient units, particularly in the South Lancashire group where coal transport costs are about 10s. per ton less than in the other groups, elimination of expensive horizontal gas, and reduction in the volume and C.V. of water gas.

Considerable savings in process costs would clearly have resulted from the operation of a smaller number of carbonising units, and among other savings known to be inherent in base load operation is the considerable reduction in solid fuel used for steam raising and the cost of maintenance. While it is difficult to assess these items accurately, a conservative estimate would be £125,000 per annum, equivalent to 0.23d. per therm.

It is therefore concluded that the net expenditure on gas made would have been reduced by over £350,000 last year, assuming ideal conditions for base loading operation and integration of the distributing system. Against this reduction, amounting to 0.62d. per therm, must, however, be set additional expenses of gas distribution and coke handling and transport.

(b) *Coke*

In estimating the cost of manufacture under conditions of integration for the year 1951-52, it was assumed that the same average price would have been received for by-products. This would have been true unconditionally for all by-products except coke. It is clear, however, that base load operation of carbonising plant would produce more coke for sale and would necessitate the redistribution of coke available over the area, with the possibility of additional costs of transportation.

Some 39,000 tons of extra coke and breeze would have been produced, made up of 35,000 tons additional in the Wirral, 33,000 tons in South Lancashire, and 29,000 tons less in Liverpool. The concentration of coke production at the base load stations would provide the opportunity for the installation of the most desirable coke handling and screening facilities to encourage the merchanting of coke and to ensure the sale of a first-class product. Consideration should also be given to the provision of storage, debreezing, and bagging facilities at coke distributing centres where there is concentration of demand other than in the locality of production stations. It is not considered that this should be a charge against base load operations, as such facilities at the present time are in any case deplorably inadequate.

Undoubtedly one of the prime factors that affects the cost of gas manufacture is the dependence on obtaining the highest possible return for the coke available for sale. Given unrestricted facilities, this is an opportunity for providing a national service by replacing the use of raw coal. The factors which cause fluctuations between glut and shortage which occur in this region should be carefully studied, and a consistent coke sales policy should be established with full regard to the conditions in the area under review.

However, if co-ordinated manufacture in the groups was established in the near future, some redistribution of the coke would be inevitable. At the worst, the cost of such transfers could not be expected to exceed £50,000 per annum and should not inhibit the implementation of the scheme.

(c) *Distribution*

Against the reduction in manufacturing costs must be set the servicing of the capital charges of the interlinking mains which make it possible and the expenditure associated with the transference of gas in bulk. The capital costs of the necessary mains and boosting equipment is estimated to be £962,000. At the standard rates of depreciation and interest this represents an annual charge of £57,000.

It is very difficult to forecast the transfers of gas in a fully integrated system in any given year. They depend mainly on the form of the annual gas-making programme and the details of day-to-day operation. Gas is passed into and out of the mains grid according to the circumstances of the moment. Even along the interlinks gas may be passing in either direction within a fairly short period. Although it is impossible to estimate the costs additional to those which would have accrued in a non-integrated system, it can be said that this method of operation has existed for some time in the Liverpool group and has proved both practicable and economic. In actual practice the maximum pressure on the principal sections of the system rarely exceeds 2 lb. per sq. in., and therefore the cost of transmission is in the order of 0.07d. per therm. This ignores the improvement to the general distribution system, with its consequent benefits to the consumer.

(*Concluded on p. 521.*)

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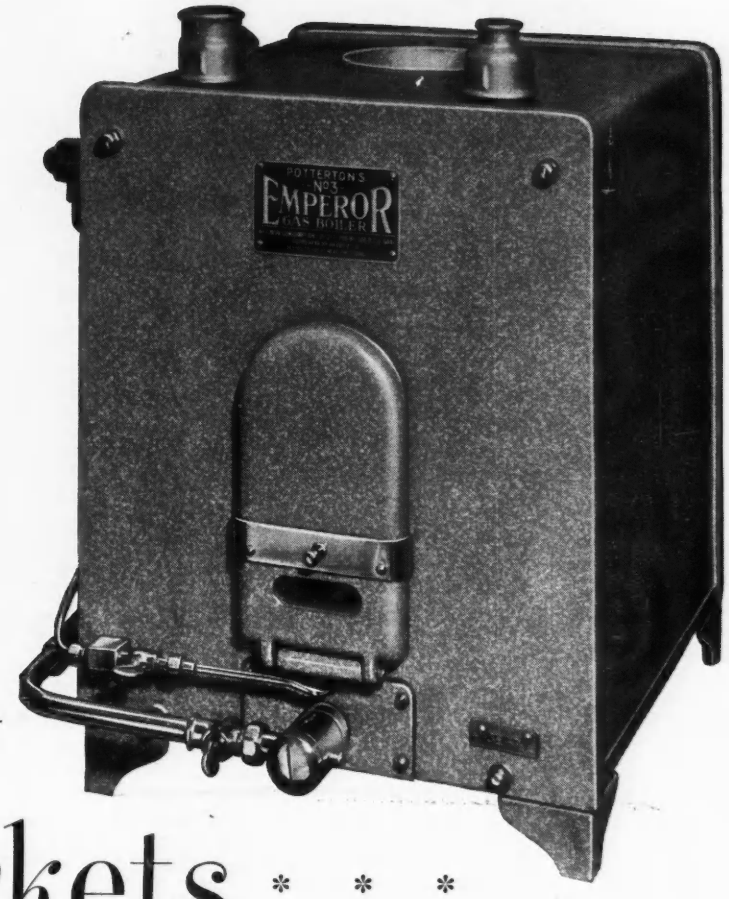

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(d) *Storage*

In considering the effects of combined working of the three groups last year, the gas storage position was examined in some detail. Daily deliveries were compared with plant available at critical periods in winter and in summer. The required holder capacity was first estimated by considering the difference between maximum stock at 6 a.m. Monday and minimum stock at 6 p.m. Friday, assuming straight-line make throughout the week. Excluding special situations at Bank Holidays, the most critical period was found to be in mid-winter with a stock variation of 28 mill. cu.ft. Taking the lowest permissible stock as 20 mill. cu.ft., the minimum capacity required for straight-line working was thus 48 mill. cu.ft.

The effect of plant flexibility on holder capacity was then considered. Allowing for elimination of almost all horizontal gas, it was found that, with increased throughput in verticals sufficient plant was available last winter to maintain the stock during the week and to allow reduction in C.W.G. make at the weekend. The stock variation would in such conditions have been the difference between 6 a.m. Monday and 6 p.m. Monday—some 20 mill. cu.ft., with a minimum required holder capacity of 40 mill. cu.ft. Extra capacity would, of course, have been required to meet unexpected variations in demand and to insure against plant breakdown, though the effect of the latter is much reduced with an integrated distributing system.

The actual holder capacity, some 63 mill. cu.ft., would clearly have been adequate to allow optimum plant working last winter. Indeed, it would have been sufficient to permit base load operation even over the August Bank Holiday period with daily demand less than daily make for a whole week. Taking account of gasholders on order, it is clear that storage will be adequate for many years under conditions of combined base load operation.

The formation of a suitable scheme of interlinkage and a coalition of the gas-making potentialities in the three groups whereby the more efficient units of plant could be base loaded, particularly the continuous vertical retort installations, would increase the overall thermal efficiency of production and assist in keeping down the cost of manufacture. Initial difficulties in regard to disposing of coke would undoubtedly arise, and the extent of this could, in certain circumstances, reduce the benefits obtained from the improved efficiency. Nevertheless, the authors feel that there is a case for the early interlinking of the three groups to obtain maximum output from the more efficient production resources available. Maximum use of the existing capital would be made and the necessity to spend additional capital on gas-making plant and storage could be deferred. The elimination of old and expensive plants could be expedited. The incidence of breakdown would be spread over a greater number of units, the proportion of standby plant, including holders required, being substantially reduced. The best use could be made of the limited resources of steel and other materials. Major repair work could be carefully programmed and the possibility of carrying out some of this work during winter months should not be overlooked. This would assist the contracting side of the industry, who have a very real problem in meeting the summer repair peak, and would undoubtedly help the three groups in question and the Board as a whole.

Large new industrial loads could be more readily accepted with an integrated system, and conversely the effect of trade recession in a particular industry would not be so pronounced.

In studying this broader field of group operations the authors are firmly convinced that if the advantages that are so well recognised are to be obtained, then, apart from the economics of the actual gas production, there is an immediate necessity to institute some interim form of combined operations which would ultimately lead towards a final integrated system of production.

ASPECTS OF INDUSTRIAL GAS APPLICATION—Concluded from page 512.

There was an enormous amount of industrial and commercial business of the smaller type which could be developed. There was no town in the south western area that had not some potentialities, and their development was the job of the industrial and distributing engineers. He felt that in some parts of the area the opportunities had been somewhat neglected. Development of the small industrial and commercial loads was of outstanding importance.

Mr. Pardoe, dealing first with the Chairman's remarks on gas-oil burners, referred to an instance in the area where a consumer was using gas in a direct-fired combustion chamber. The consumer decided to use oil, and first tried a heavy oil at 8d. per therm, against 1s. 4d. per therm for gas. He afterwards tried a light oil which, at 11d. per therm, was still cheap in comparison with gas. Without co-operation they would have had no gas load there at all, but in this instance the industrial department had co-operated and the consumer was using gas-oil burners, and was very satisfied with the results. He appreciated Mr. Ingham's remarks, and promised to discuss the matter on a more appropriate occasion.

Mr. L. P. Ingram (Southern Divisional General Manager, Torquay) said he could not altogether reconcile Mr. Pardoe's remarks early in the paper about industrial consumers being called on regularly by the same persons with his later observations relating to industrial specialists being independent of sub-divisional boundaries. In his experience much business was done in a social atmosphere, and he thought the real answer to the suggestion made by Mr. Ingham was that there should be co-operation between the sub-divisions and the industrial gas officer and his staff. They were going through a teething stage at the moment, but he believed they would reach a point at which the industrial gas department would do the technical work and the local man would make the necessary social contacts. They must find a happy medium which would be in the ultimate interests of the area board.

The south western area had always been regarded as a holiday area, but since he had been at Torquay he had found that part of the area had become semi-industrialised, quite apart from the substantial catering load in Mr. Denton's district. He was particularly impressed with the new development described by Mr. Pardoe for preserving the newly-baked condition of bread overnight, and he thought that in that direction there lay prospects of developing a fairly big load.

Mr. Pardoe said that apart from the exceptions mentioned in the paper the system appeared to be working quite satisfactorily, but he was still awaiting further tests results.

Mr. F. W. R. Santler (Bude) said the first results were satisfactory apart from the fact that in one instance there had been some overheating, which was now being corrected. The bakers were very pleased, and the bread came out next day in a freshly baked condition. He hoped for considerable developments.

Mr. A. P. Jennings (Plymouth) said he failed to see any special advantage in baking, say, 1,000 loaves in 12 hours and keeping them overnight in a humidified room, compared with baking 1,000 loaves over the full period of 24 hours.

Mr. Pardoe explained that it was the baking industry iself, and not the gas industry, that had decided that night baking should be discontinued, and that decision had given the gas industry the opportunity of showing what it could do.

In answer to **Mr. Ingram, Mr. Pardoe** said the cost of humidification was very small, and the whole procedure was cheaper than night baking.

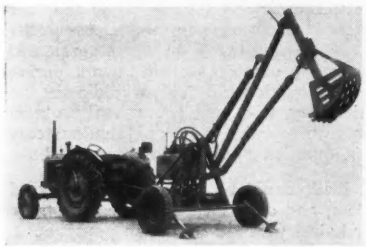
Mr. T. N. Dent (Weston-super-Mare) said there was an aspect of industrial gas utilisation that had not been mentioned. In considering competition with electricity and oil the gas engineer had to put himself in the place of the industrialist who was engaged in making something in competition with his rivals. The industrialist had to compete not only with his neighbour, who might be using some other fuel, but with producers of the same articles in other areas who might be enjoying the advantages of cheaper gas.

Mr. Pardoe said if they wanted cheaper gas it must be produced in the retort house, and they must look to the production engineers to give them what they needed.

TRADE NEWS

John Allen & Sons

AS makers of the well-known Allen motor scythe, the firm of John Allen & Sons (Oxford), Ltd., has won a deservedly high reputation in the agricultural industry. Another interesting product of this factory is the Atos tractor operated shovel, which has many useful applications in the public utility industries. This highly mobile tractor attachment, weighing approximately 25 cwt., is attached by its drawbar to a medium size agricultural tractor, the rear p.t.o. of which transmits power by a universal joint shaft to the hydraulic pumps of the Atos. It can be attached and detached in a few minutes.



The Atos tractor-operated shovel.

Capable of cutting trenches in hard materials such as chalk and dry clay, it can equally be used as a shovel—so that the machine is both a digger and a loader, convertible from one to the other function in a few moments simply by changing the bucket. Several widths of buckets are available from 18 in. to 24 in., while narrower buckets can be made to order. The output of the trenching bucket is approximately 10 to 15 cu.yd. per hour.

The operation is extremely simple as there are only three controls, all hydraulic; there are no brakes, clutches, or gears to give trouble. Hydraulic bypass valves cut off the power as the pressure rises, thus saving the machine from damage should the bucket hit an underground obstruction. For trench digging the maximum width is 2 ft. and the maximum depth of cut 8 ft. 6 in. The maximum loading height is 12 ft. 9 in.—*John Allen & Sons (Oxford), Ltd., Cowley, Oxford.*

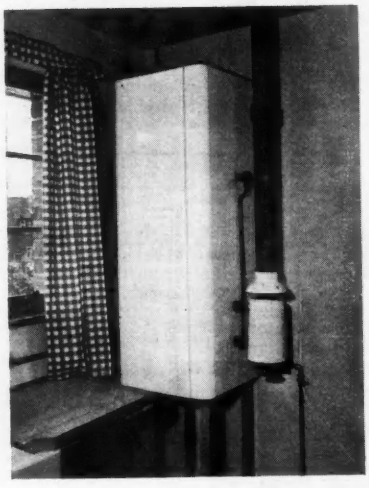
United Ebonite

A NEW sectional insulating jacket which can be fitted in a matter of minutes to any type of domestic hot water storage cylinder or immersion heater is now being produced by Eeto insulations. Each section of the jacket consists of a ¾ in. layer of fibreglass with a stout canvas backing and a glossy cream plastic exterior. The requisite number of these sections, each of which is 6 in. wide, is hooked on an extensible ring fitted round the water inlet pipe and bound tightly to the cylinder by flexible black lacquered steel bands.

The glossy finish of this Eeto jacket offers many advantages over the conventional type. Made from Lorival plastic material, it is non-inflammable, vermin-proof and hygienic. An occasional wipe down with a damp cloth is all the cleaning required to restore its neat attractive appearance.

Recent tests have shown that using the jacket leads to enormous reductions in heat losses. In one installation, with a jacketed 20-gal cylinder connected to a circulating boiler with Eeto-lagged pipes, it was found that nearly 76,000 B.Th.U. were saved in keeping the water at 140°F for 24 hours—enough energy to heat 57 gal. of water from 40° to 140°F.—*United Ebonite & Lorival, Ltd., River Street, Bolton, Lancs.*

Radiation Ltd.



In a number of Council flats in the Brighton Road Housing Estate at Horsham the South Eastern Gas Board have installed C12 'Circulyn' circulators attached to 20-gal. insulated cylinders. The installation shown here is in the kitchen of one of the flats.

Stabilag

THE Stabilag system of infra-red plant heating provides a tailor-made heating jacket that will give a uniform distribution of the heat source over part or the entire surface, as desired, of a vessel or a pipeline of any size or shape—with no risk of hot spots.

Using fibreglass cloth the jackets have a temperature range up to 550°C. and with quartz cloth up to 1,000°C. Every jacket has a multiplicity of circuits, each circuit being equal in area, thus ensuring that when the electricity is switched on or off the response is uniform and instantaneous. It does not require elaborate control equipment.

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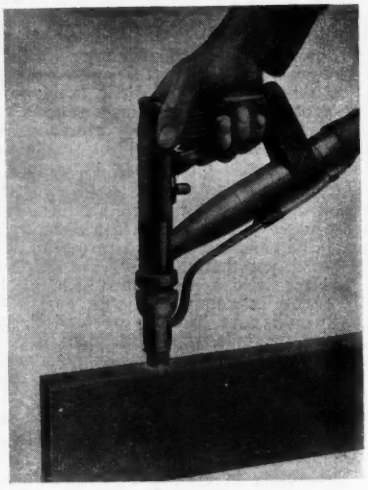
British Oxygen Company

THE Argonarc spot welding process has been introduced to meet the need for speedy flux-free spot welding on stainless steels and also for tack welding in assembly work. The process may also be used on bright mild steel and certain non-ferrous metals. One of the major advantages of the process is that access to one side of the work only is required and this makes possible the use of the equipment on joints which would be inaccessible to conventional spot welding equipment. A further advantage is the ability to join thin to thick sections.

The operating cycle is automatic and no skill is required of the operator apart from positioning the torch and working the trigger switch. The equipment is fully transportable, and since the arc is screened by the torch nozzle it may be used in any workshop without inconvenience to other personnel.



Argonarc spot welding torch.

A descriptive leaflet is available and this includes information on the components comprising the equipment, its operation and details of typical joints for which the process is suited.—*British Oxygen Co., Ltd., Bridgewater House, Cleveland Row, S.W.1.*

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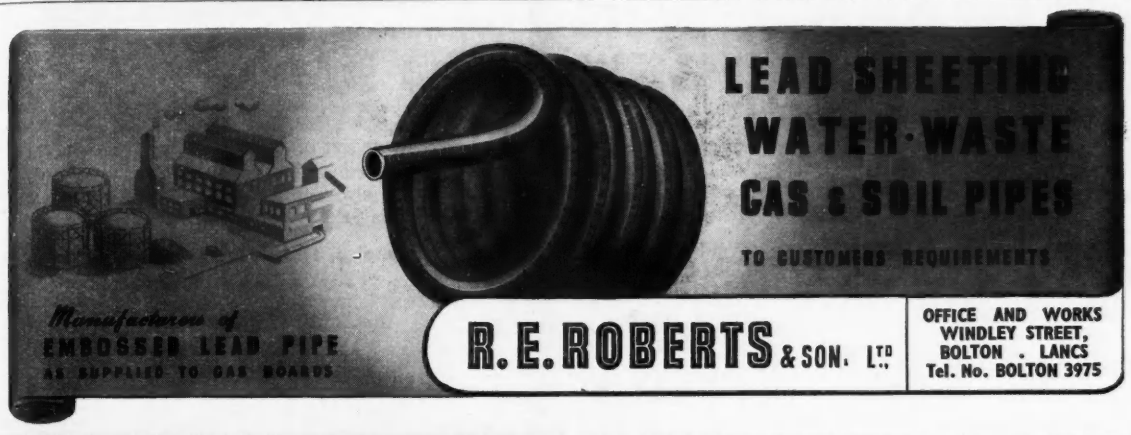
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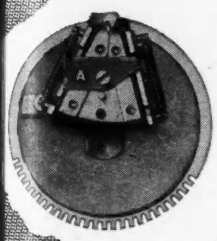

Fig. 1, on left, shows the back of the range-plate adjusted for optional coin. The swinging plate 'A' defies any attempt to insert a coin when one is already in the other slot.

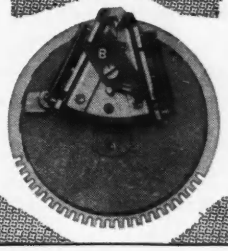

Fig. 2, on left, shows the plate positioned to admit sixpences only. To make this adjustment, loosen screw 'B' and tighten it again with the plate in the new position.

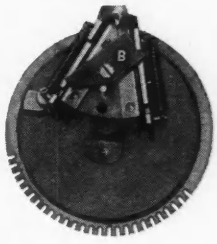

Fig. 3, on left, shows the plate positioned for shillings only. To make this adjustment, remove screw 'B', reverse the plate as shown and replace the screw.

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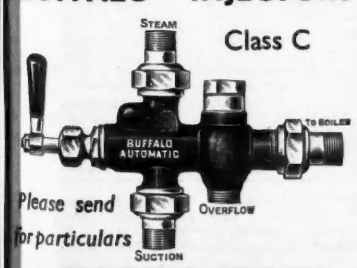

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Classified Advertisements : All small classified advertisements are charged at 1/9 per line (approx. 7 words) - minimum charge 10/6. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

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SOUTHERN GAS BOARD

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Applications, stating age, education, training, qualifications, and full particulars of previous experience (including positions held and salaries earned), together with a one-page summary covering these five headings should be sent in an envelope marked 'Divisional Accountant' to the General Manager, Northern Division, Southern Gas Board, Therm House, St. Aldates, Oxford, to reach him not later than Friday, December 1952.

T. E. D. MASON,
Secretary.

164, Above Bar,
Southampton.
November 11, 1952.

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Applications, giving full particulars of training, qualifications and experience, and the names of two referees, should be addressed to Mr. J. E. Wakefield, Divisional General Manager, West Midlands Gas Board, Birmingham and District Division, Gas Offices, Edmund Street, Birmingham, 3, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
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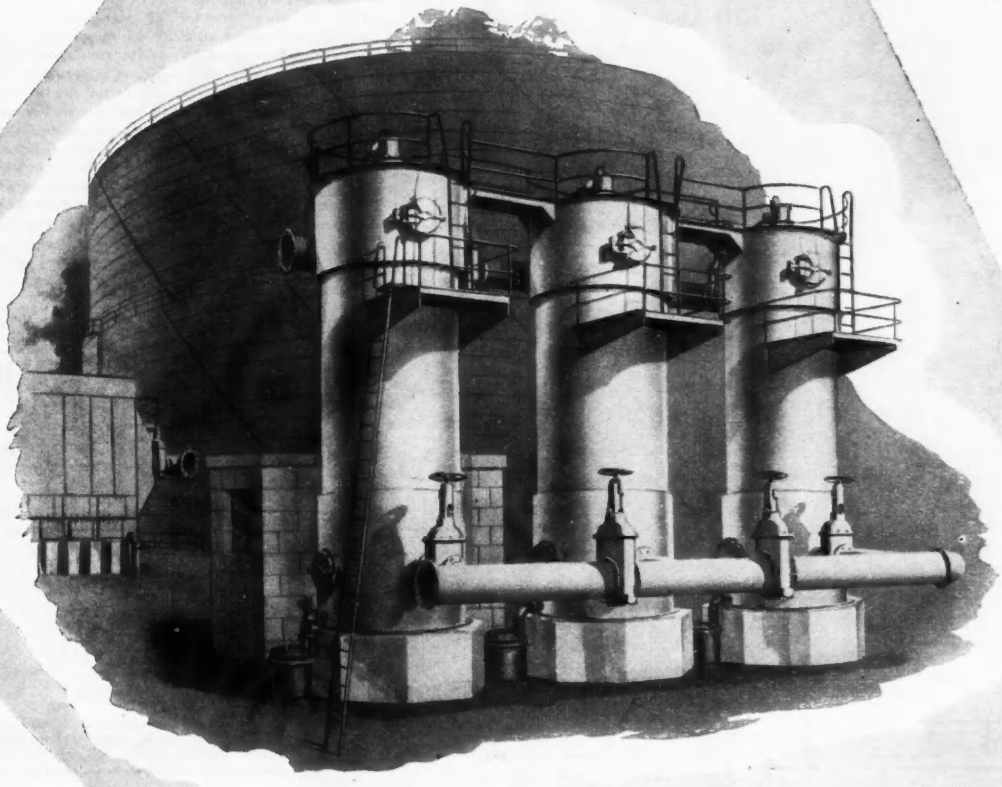

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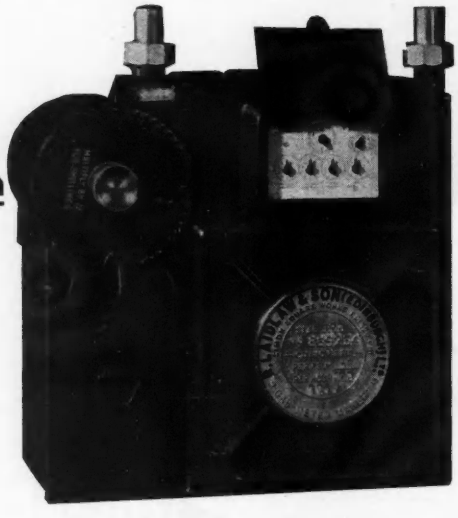

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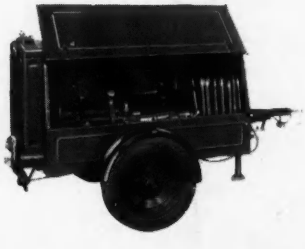
The SV78 Portable Sleeve Valve Compressor delivers 60 cu. ft. of free air per minute at 100 lbs. p.s.i.—sufficient to operate 8–10 Scaling Hammers.



"BROOMWADE"

Air Compressors and Pneumatic Tools

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